

Petersen's Photographic Magazine

**HOW TO: PHOTOGRAPH WATER
FOR SPARKLING EFFECTS**

**SHOOT AND EDIT SINGLE
SYSTEM SOUND
MOVIES**

**PLUS: ALL
ABOUT
FLASH
BRACKETS**

**COLOR
PRINTING
SERIES,
PART IV**





Nikkormat EL. Because great pictures won't always wait to be taken.

So many of the things we'd love to photograph are always in motion. Some quickly, some with easy grace. So often, there's a perfect moment...one that really makes a great photograph. How many have you missed? Because of your camera?

When the subject moves, and it won't be back, there's no time to shoot more than one, or even fiddle around with matching needles. What it takes is a fully automatic camera...that also has the sophisticated facilities you need to shoot anywhere, in any light.

The Nikkormat EL. The automatic from Nikon. Fully, electronically, automatic. With the accuracy of Nikon center-weighted metering. All you do is focus and shoot. But there's so much more. When the light's really tricky, you can "freeze" any setting with the unique Memory Lock. Or, you can take over at any time and use it as a regular match-needle camera...and have the use of all the shutter speeds, from 4 full seconds through 1/1000th. The electronic flash synch goes up to 1/125th.

Automatic or manual, the EL works with every one of the more than 50 Nikkor lenses. And you view and meter at full aperture with all the auto lenses. You're not limited to a handful of special lenses, as with most automatics. In fact, the EL is even automatic with closeup equipment.

You can learn more about the EL at your dealer. And more about photography at the Nikon School, heading your way soon. For details on both, write for Folio 28, Nikon Inc., Garden City, N.Y. 11530. ☐☐☐ Subsidiary of Ehrenreich Photo-Optical Industries, Inc. (In Canada: Anglophoto Ltd., P.Q.)



Nikkormat EL

It brings out the Nikon in you.

THIS ISSUE:



Page 42



Page 54



Page 63

FEATURES

- 33 Spec Sheet**
Toshiba ES-10S and Vivitar 283 electronic flash units
- 42 Liquid Images**
Water, water everywhere—by Jim Zuckerman
- 48 The Fine Art of Buying Flash Brackets**
Hold on to your pennies—by Kalton C. Lahue
- 54 Home Movies: How To Shoot and Edit Single System Sound**
Tackling the Talkies—by Ernst Wildi
- 63 Ken Whitmore: Disciplined Diversity**
Portfolio
- 76 Color Printing, Part IV**
The Unicolor color print system—by Steven Rosenbaum
- 81 PhotoGraphic's Technical Index**
D-76 or ID-11 for Kodak and Ilford films—by Parry C. Yob
- 84 Spec Sheet**
135mm f/2.3, 70-210mm f/3.5 macro focusing and 35-85mm f/2.8 Vivitar Series 1 lenses
- 85 Blueprint**
How to construct a location north light—by Walt Seng
- 88 Darkroom Lighting, Part I**
How to build a multiple-use light table—by Parry C. Yob

DEPARTMENTS

- 2 On the Scene**
Of Photographs and Horticulture—Seeds for April Sowing
- 5 Guide Lines**
Remedy for Contrasty Negatives
- 6 Other Voices**
- 14 Product Proof Sheet**
- 20 Club Close-Ups**
All You Have to Do Is Ask
- 22 Point Source**
There's No School Like an Old School
- 24 Self-Assignment**
Developing Times
- 26 Focus**
The Super 8 Book
- 30 Camera on Campus**
Teach the Zone System in High School?
- 36 110 Photography**
Conquer Camera Movement for Sharper 110 Pictures
- 39 Where the Action Is**
Continued Response to Readers' Questions
- 74 Gallery '76**
- 96 Bicentennial News**
- 100 Advertising Index**
- 102 One to One**
Decoupage for Your Photo Projects

COVER

Jim Zuckerman shot this month's cover photo in a remote region of Kauai, Hawaii, to illustrate his story, "Liquid Images," which be-

gins on page 42. Pentax 6x7 with 105mm SMCT lens was loaded with Kodak Ektachrome-X Film, and an exposure of 1/250 at f/11 was used to capture the reflection of a late afternoon sun framed by a cave opening.



ON THE SCENE

THE EDITORS



ZUCKERMAN



LAHUE



YOB



WILDI



ROSENBAUM



WHITMORE

OF PHOTOGRAPHS AND HORTICULTURE—SEEDS FOR APRIL SOWING

If it's raining these days in your neck of the woods, don't despair. April showers bring May flowers, or so the jingle goes. But this month's issue has a good deal more to offer than posies and platitudes. Sprinkled throughout these pages are a multitude of photographic seeds in the form of imaginative ideas and solid, nuts-and-bolts techniques for you to germinate in your own photographic garden . . .

What better rainy day reading could photographers ask for than **Jim Zuckerman's** article explaining how to capture any form of water, from dewdrops to oceans and bubbling streams, on film? Entitled "Liquid Images," the story just may find you dashing out to capture some of the larger bodies of water in your area as well as the puddles on your doorstep . . .

In a somewhat drier vein but equally enlightening is "The Fine Art of Buying Flash Brackets," in which **Kalton C. Lahue** tells you how not to get duped by an impulsive infatuation with gadgetry. His good advice will help you assess your own particular needs in this department and might save you *mucho moolah* when you're ready to make a purchase . . .

Parry C. Yob tells you how to build a multiuse light table in his "Darkroom Lighting, Part I." It's a good indoor project for a rainy afternoon or evening spent at home . . .

We feel like Johnny Appleseed this month, since there are still many more potential petunias in our April package . . .

One such seed that's sure to sprout like dandelions in the next few years is carefully nurtured by **Ernst Wildi** on these pages. In response to the many questions we've received ("But how do you edit sound movies?"), "Home Movies: How to Shoot and Edit Single System Sound" provides a detailed technique for doing just that . . .

In "Color Printing, Part IV" **Steve Rosenbaum** discusses the Unicolor System—what's involved, how it works and why it's worthwhile to look into when you're comparing methods for making really beautiful color prints in your own darkroom . . .

The photographs featured in this month's portfolio are those of **Ken Whitmore**, an extremely versatile pro who has adamantly refused to specialize throughout his successful career. When you see Ken's work, you'll know why he can't be easily categorized. He carefully chooses his assignments and then interprets his subjects with inimitable style and imagination . . .

COMING NEXT MONTH:

PhotoGraphic begins its fifth year of monthly publication with an exciting anniversary issue.

UNDERWATER PHOTOGRAPHY—exploring inner space.

3-M COLOR-IN-COLOR—how artists and photographers use technology to create truly incredible images.

CLARA PETZOLDT—A time remembered. Great photographs from the turn of the century.

PLUS:

COMPUTERIZED ENLARGING CHART—take the guesswork out of exposure timing.

EDITOR MOURNED

William Reedy, senior editor for Eastman Kodak, died December 15, 1975. Reedy founded Kodak's *Applied Photography Magazine* and authored *IMPACT—Photography for Advertising*. He received honorary awards from such respected institutions and organizations as Brooks Institute, the Professional Photographers of America and the American Society of Photographers. Reedy was devoted to photography and creative expression, and he will be missed.



REEDY

Brent H. Salmon/Publisher
Paul R. Farber/Editor
Karen Sue Geller/Managing Editor
Jim Creason/Art Director
David B. Brooks/Feature Editor
Joan Yarfitz/Associate Editor
Markene Kruse-Smith/Associate Editor
Mike Stensvold/Special Projects Editor
Steven Rosenbaum/East Coast Editor
Natalie Carroll/Administrative Assistant
Contributing Editors
Ben Helprin
Kalton C. Lahue
Steve Poster
Robert D. Routh
David Sutton
Parry C. Yob
Far East Correspondent
M. A. Hadley
PhotoGraphic Advertising Representatives
Scott McLean/Western Advertising Manager/
 Chicago/Los Angeles
Carl Yanowitz/Eastern Advertising Manager/
 New York
Joe Gisburne/New York

PETERSEN ACTION GROUP (PAG)

Alan Waxenberg/Vice President, National Advertising Director (New York)
 Richard C. Opler/Midwest Advertising Director (Chicago)
 Chuck Campbell/Western Advertising Director (Los Angeles)

SALES OFFICES

ATLANTA

515 Peachtree St. N.E., Suite 414
 Atlanta, Georgia 30308
 Phone: (404) 676-0781

BOSTON

Prudential Tower, Suite 4850
 Prudential Center
 Boston, Massachusetts 02199
 Phone: (617) 262-7400

CHICAGO

John Hancock Center
 875 N. Michigan Ave., Suite 3131
 Chicago, Illinois 60611
 Phone: (312) 222-1920

CLEVELAND

Bond Court, Suite 1206
 1300 East 9th Street
 Cleveland, Ohio 44114
 Phone: (216) 696-7900

DETROIT

333 West Fort Street Building,
 Suite 1800
 Detroit, Michigan 48226
 Phone: (313) 964-6680

LOS ANGELES

7833 Sunset Blvd.
 Los Angeles, California 90046
 Phone: (213) 874-3000

NEW YORK

437 Madison Ave., New York
 New York 10022
 Phone: (212) 935-9150

PETERSEN PUBLISHING COMPANY

R.E. PETERSEN / Chairman of the Board

F.R. WAINGROW / President

PHILIP E. TRIMBACH / Vice President, Finance

HERB METCALF / Vice President, Circulation Marketing

WILLIAM PORTER / Circulation Director

JACK THOMPSON / Circulation Assistant Director

SPENCER NILSON / Administrative Services Director

ALAN C. HAHN / Market Development Director

JAMES J. KRENEK / Purchasing Director

THOMAS R. BECK / Production Director

AL ISAACS / Graphics Director

BOB D'OLIVO / Photography Director

MARIA COX / Data Processing Services Manager

Petersen's PhotoGraphic Magazine, © Copyright 1976 by Petersen Publishing Co. All rights reserved. Published monthly by Petersen Publishing Co., 8490 Sunset Blvd., Los Angeles, California 90069, Phone (213) 657-5100. Single copy \$1.25. Printed in U.S.A.

SUBSCRIPTION RATES: U.S., Military, Possessions, 1 year \$9.00, 2 years \$15.00; Canada, other countries, 1 year \$10.00; 2 years \$17.00. Subscription enquiries, phone (213) 657-5100.

CHANGE OF ADDRESS: Give 6 weeks' notice. Send name of magazine and address imprint from recent issue or state exactly how label is addressed. Send old address as well as new. Mail to PhotoGraphic Magazine, 6725 Sunset Blvd., Los Angeles, California 90028.

CONTRIBUTIONS: Should be mailed to PhotoGraphic Magazine, 8490 Sunset Blvd., Los Angeles, California 90069. They must be accompanied by return postage. Any material accepted is subject to such revision as is necessary in our sole discretion to meet the requirements of this publication. Upon publication, payment will be made at our current rate, which covers all author's and/or contributor's rights, title, and interest in and to the material including but not limited to photos, drawings, charts and designs, which shall be considered as text. The act of mailing a manuscript and/or material shall constitute an express warranty by the contributor that the material is original and in no way an infringement upon the rights of others. We assume no responsibility for unsolicited material.

Second class postage paid at Los Angeles, California, and at additional mailing offices.

POSTMASTER: Please send Form 3579 to PHOTOGRAPHIC Magazine, Post Office Box 3414, Los Angeles, California 90028.



Easier than bounce, better than direct. A new kind of flash

Strobodomes for wrap-around, shadow-softening effects . . . with every Honeywell 480S

Honeywell Strobosonar — inventors of the first strobe flash and the first automatic — have come up with another first: exclusive, light-diffusing domes to improve the quality of light you can get with flash photography. Natural-looking light, flattering pictures. Without twisting or tilting. In fact, all you do is aim and shoot.

A set of 4 domes comes with the thyristorized 480S, the top-of-the-line, shoe-mount Strobosonar that's automatic all the way out to 40 feet, with a choice of 3 f/stop settings for creative depth-of-field control.

Shoot with complete confidence. A Green Light automatically gives you the "go" signal when the light is right for good exposure. Another Honeywell innovation that helps take the guesswork out of flash photography.

Most compact. Unlike clumsy, top-heavy shoe-mounts, the 480S packs all these features into a package that perches on your camera so lightly, you hardly notice it. Another nice benefit of our 25 years of experience.

Faster than you are. The thyristorized 480S recycles as fast as 7/10 second, faster than you can advance film. Same

energy-saving feature lets you re-charge Ni-Cads for several flashes in just five minutes, gives you as many as 500 with a full 3-hour charge.

Free vinyl carrying case comes with the Auto/Strobosonar 480S and set of 4 Strobodomes: orange to add warmth to portraits; dark gray to help you get extra close to subjects (up to 18") and still get excellent detail; and heavy and light white for most flash situations. And if you ever need additional accessories, a complete system is available, for special effects, including 8 interchangeable lenses, quick release brackets and handles to convert your shoe-mount Strobosonar to an off camera handle-mount.

Ask your dealer for a demonstration. Or write for free literature. Honeywell Photographic, P.O. Box 22083, Dept. 204-758, Denver, CO 80222.

Honeywell Strobosonar

THE BEST PHOTOGRAPHIC BOOKS ON EVERY SUBJECT

NO BOOK HIGHER THAN \$6.95 ★ PRICES AS LOW AS 76¢

FOR AMATEUR, THE ADVANCED, AND THE PROFESSIONAL

ONLY 76¢ EACH

Available while supplies last

PAPERBACKS—List \$1.45 Each

0351. Pictures By Indoor Lighting
0357. Photographer's Gd. To Movies
0372. How To Handle Kodachrome
0376. How To Choose & Use Color Film

PAPERBACKS—List \$2.95 Each

0205. Basic 8mm Movie Reference
0212. Better 8mm Home Movies
0926. Pictures Unlimited (Photo Sources)
0277. Scenarios, Scenarios, Scenarios
0202. Anscochrome & Ektachrome Processing
0398. Better Color Slides Indoors
0363. Lens Tech. Color Movie Magic
0259. Photographic Films & Their Use
0284. Tape Recorder Service Manual
0239. Instant Film Test Chart
0927. Make Better Polaroid Pictures

HARDCOVER—Lists up to \$7.95

0390. Cameras: The Facts ('63-'64)—List \$7.95
0984. Photography All Year Round—List \$3.95
0455. Hal Reiff's Glamour Manual—List \$3.95
0925. Photographs by Father Keys—List \$3.95
0499. Floyd's Photo Tips—List \$3.95
0471. My Camera Pays Off—List \$7.95
0475. Official Depth of Field Tables for 35mm List \$6.50
0905. Hey, Hey Can't Catch Me—List \$4.95
0670. Photography W/EyeLevel Reflex—List \$7.95

SUBJECT GUIDES Only \$2.95 Each

0201. Amateur Photog. Model Guide
0203. Art of Glamour Photography
0207. Basic All-35mm Shooting
0213. Binoculars and Scopes
0110. Careers in Photography
0219. Close-Up Photog. & Copying
0223. Creative Figure Photography
0488. Creative 35mm Photography
0699. Electronic Flash Guide
0957. Everybody's Photo Course
0114. Experimental & Trick Photog.
0229. Filter Guide
0147. Guide to Perfect Exposure
0234. Hand Coloring Your Photos
0928. How to Sell Your Pictures At a Profit
0238. Hunting-Camera & Binocular
0121. Improved 35mm Techniques
0240. Lens Test Chart & Book
0122. Kodachrome II & X
0245. Legal Aspects of Photography
0698. Lens Guide
0246. Lighting in Photography
0141. Nude, Figure & Glamour Photog.
0142. Nude in 101 Moods
0150. Photography Thru Monoculars, Binoculars & Telescopes
0268. Portrait Photography
0270. Press-View Camera Technique
0346. Printing With Variable Contrast Papers
0271. Retouching Negatives & Prints
0109. Shooting Record Index
0153. Single Lens Reflex Photog.
0155. Table Top & Still Life Photog.
1000. Model Releases-Pad of 50—\$1.50

SAVE \$2.00 PER BOOK
EACH LISTED AT \$7.95

Special \$5.95 Each

0504. Getting Started in Photojournalism
0512. Electronics For Photographers
0518. Photography From A to Z
0522. Topcon Unirex/Auto 100 Manual
0531. Collecting Classic Films
0547. Collecting Vintage Cameras
0645. How To Make Movie Magic
0932. Collection of Photographs (List \$7.50)

MODERN PHOTO GUIDES (A SIMPLIFIED SERIES)

Only \$3.45 Each

0196. Developing, Printing & Enlarging
0197. 35mm Photography
0198. Photographic Tricks
0199. Night Photography
0181. Animal & Pet Photography
0182. Beginner's Photography
0184. Nature Photography
0185. Electronic Flash
0186. Super 8mm Movie Making
0187. Getting Started in Photography
0188. Creative Photographic Effects
0183. Better Photography for Amateurs

HARDCOVER BOOKS Only \$4.95 Each

0423. Basic Photography
0442. Binoculars and All-Purpose Telescopes
0443. Close-Up Photography
0447. Electronic Flash
0450. Filter Guide In Color & B&W
0458. How To Process Color Films
0459. Retouch & Spot Negs. & Prints
0498. Perfecting Your Enlarging
0281C. Star-Gazing With Telescope And Camera
0158. Wedding and Party Photography

SPECIAL SUBJECTS FROM \$2.00 To \$6.95

0577. Focus On Sports.....\$ 5.95
0578. Basics of Underwater Photography...\$ 5.95
0180. Tiffen Practical Filter Manual.....\$ 4.95
B3H. Kodak Filters For Scientific And Professional Use—List \$7.95.....Special \$ 6.95
0403. Photographic Pleasures—List \$7.95.....Special \$ 6.50
0601. All-In-One Tape Recorder.....\$ 4.95
0615. Color W/Kodak Films.....\$ 5.95
0625. How To Plan Super 8 Movies.....\$ 5.95
0460. How To Shoot & Sell Money Making Pictures.....\$ 5.95
0537P. Movie Making In 18 Lessons.....\$ 3.50
0586. Practical Photographic Enlarging.....\$ 4.95
0543P. Programmed Photography: Lenses.....\$ 3.95
0574. Zone VI Workshop.....\$ 6.95
0600C. All In One Camera Book.....\$ 6.95
0555. The Home Darkroom.....\$ 3.45
0647. How To Edit Home Movies.....\$ 3.50
0542. Basic Color Photography by Feininger.....\$ 6.95
0137. Ultra Miniature Photography List \$7.95.....Special \$ 3.95
0560. You & Your Camera.....\$ 4.95
0902. Action Photography.....\$ 2.00
0343. Say It With Your Camera.....\$ 4.95
0639. All-In-One Movie Book.....\$ 6.95

CAMERA GUIDES Only \$2.95 Each

0651. Canon Reflex Guide
0629. Exakta-Exa Guide
0116. Fujica Guide (old models)
0230. Graphic and Linhof Guide
0174. Hasselblad Guide
0765. Konica 35mm Guide
0662. Konica Reflex Guide
0172. Leicaflex & Leicaflex SL
0612. Mamiya 35mm SLR Sekor
0663. Minolta SR & SRT Guide
0167. Minolta TLR Guide
0251. Miranda Eye-Level Cameras (Old Models)
0610. Nikkormat Guide
0609. Nikon F/FTN Guide
0761. Olympus Compact Guide
0643. Olympus OM-1 Guide
0667. Pentax Guide
0273. Retina Eye-Level Reflex Guide
0175. Yashica TLR Cameras

DISCOUNTS 50% & MORE!

0945. Face of Love (Nudes)—List \$15.00—Spec. \$6.95
0977. Reinhold's Photo/Movie Book—List \$9.95—Spec. \$4.95
0920. Guide to Rollei Photog.—List \$8.95—Spec. \$3.95
0534. Victor Kappeler Man + Camera—List \$19.95—Spec. \$8.95
0634. Commonsense Photog.—List \$11.95—Spec. \$5.95
0635. Microscope As A Camera—List \$13.95—Spec. \$6.95
0795. Business Of Photojournalism—List \$12.95—Spec. \$5.95
0930. Introduction To Photography—List \$9.95—Spec. \$4.50
0986. Tech. of Modern Photog.—List \$8.95—Spec. \$4.25
08030. German Photog. Annual '63—List \$10.00—Spec. \$3.95
0901F. Brit. Jour. Photog. '72—List \$12.95—Spec. \$5.95
0901H. Brit. Jour. Photog. '74—List \$13.95—Spec. \$6.50

CAMERA GUIDES

0169. Minolta SR-T Guide.....\$ 4.50
0350. Picture Making With Argus.....\$ 5.00
0921. Canon F-1 System.....\$ 5.95
0695. Leica Guide.....\$ 3.95
0464. Minolta 16 Camera Guide.....\$ 3.95

DATA BOOKS

1548. B. & W. Film Data Book.....\$ 3.95
1549. B. & W. Processing Data Book.....\$ 4.95
1550. Color Film & Processing Data Book.....\$ 3.95

PHOTOGUIDES (HARDCOVER) List \$8.95

Special \$6.95 Each

- 0767C. Photoguide To Home Processing
0768C. Photoguide To Single Lens Reflex
0769C. Photoguide To Effects & Tricks
0770C. Photoguide To Enlarging
0771C. Photoguide To Flash
0772C. Photoguide To Taking Portraits

Free Bonus Books

If your order amounts to \$15.00 or more, choose any book in this ad, priced at \$4.95 or less.

If your order amounts to \$20.00 or more, choose any book in this ad at any price. Indicate the number of your free bonus book choice in the coupon.

MAIL COUPON TODAY! • Master Charge Accepted

VERLAN INDUSTRIES, INC., Dept. PEB-476

750 Zeckendorf Blvd.
Garden City, N.Y. 11530

Please send me the following books:

No. _____ No. _____ No. _____ No. _____ No. _____
No. _____ No. _____ No. _____ No. _____ No. _____
No. _____ No. _____ No. _____ No. _____ No. _____

Add 50¢ shipping for up to 3 books and 15¢ for each additional book.

☐ My order is for \$15.00 or more, send free bonus book No. _____ (amounting to \$4.95 or less).☐ My order is for \$20.00 or more, send free bonus book No. _____ (any book in this ad at any price).I enclose ☐ check or ☐ money order (N.Y. State residents add applicable sales tax.)☐ CHARGE TO MY MASTER CHARGE ACCOUNT

Account No. _____ Bank No. _____ Exp. Date _____

Name _____ (please print)

Address _____

City _____

State _____

Zip _____

Add 15% for Canadian and foreign orders (except APO/FPO).

KODAK PAPERBACKS

- AC44. Adventures In Existing Light Photography.....\$ 1.25
AB1. Filters and Lens Attachments.....\$ 1.95
AC2. Flash Pictures.....\$.95
AE81. Here's How.....\$ 1.50
AE83. More Here's How.....\$ 1.50
AE104. The 3rd and 4th Here's How.....\$ 3.50
AE87. Fifth Here's How.....\$ 1.50
AE88. Sixth Here's How.....\$ 1.00
AE90. Seventh Here's How.....\$ 1.50
AE94. Eighth Here's How.....\$ 1.40
AE95. Ninth Here's How.....\$ 3.50
N1. Medical Infrared Photography.....\$ 2.00
M1. Copying.....\$ 1.50
M5. Photography From Light Planes & Helicopters.....\$ 1.50
M7. Basic Police Photography.....\$ 1.50
M27. Ultra Violet & Fluorescence Photography.....\$ 2.25
M28. Applied Infrared Photography.....\$ 2.00
P2. Photography Through Microscope.....\$ 3.25
N12A. Close-Up Photography.....\$ 2.95
AD2. To Make Good Sound Movies.....\$ 2.50
AR21. Kodak Master Photoguide.....\$ 3.95
G1. Kodak Photographic Papers.....\$ 1.50
F5. Kodak Professional B&W Films.....\$ 1.50
AC31. Indoor Picture Taking.....\$ 4.95
AF1. Kodak Roll Films For Amateurs.....\$ 1.40
AE7. New Adventures In Indoor Color Slides.....\$.95
AE9. New Adventures In Outdoor Color Slides.....\$.95
O18. Photography With Large Format Cameras.....\$ 2.00
E66. Printing Color Negatives.....\$ 2.50
E96. Printing Color Slides.....\$ 2.50
J1. Processing Chemicals And Formulas.....\$ 1.50
O4. Professional Portrait Techniques.....\$ 2.50
G5. Professional Printing In B&W.....\$ 1.00

KODAK BOOKS (HARDCOVER)

- AW2H. Home Movies Made Easy.....\$ 4.95
AG18. Creative Darkroom Techniques.....\$ 6.95
E74H. Color As Seen & Photographed.....\$ 4.95



GUIDE LINES

PAUL R. FARBER

REMEDY FOR CONTRASTY NEGATIVES



□ Occasionally, and I did say "occasionally," most of us run afoul of a negative so contrasty that it seemingly defies even the softest grade of enlarging paper. With the use of soft grade enlarging paper, the shadow areas usually end up flat and uninteresting, lacking a degree of snap that we usually associate with a good, full-scale print. The highlights, too, seem to be muddled and lack sparkle. The result? One uninteresting enlargement of a potentially good photograph.

Usually, when the negative is important enough, many of us will resort to some type of chemical treatment in an effort to reduce the excessively high contrast. Unfortunately, unless one knows for certain if the high contrast is merely one of scene values or if the contrast is the result of accidental overdevelopment, the negative treatment can be improper, resulting in the complete loss of the negative.

If the negative is, for example, contrasty due to subject values, then a one-step Farmer's Reducer treatment can be used with effectiveness. If the contrasty negative is the result of too much development, then a two-step (divided) Farmer's Reducer treatment will be effective. In any event, even with the most careful handling of the Farmer's Reducer treatment, one must have a good deal of prior experience in order to achieve a negative that will print well—all of which does little or nothing to remedy an immediate need.

If the negative is, for example, contrasty due to subject values, then a one-step Farmer's Reducer treatment can be used with effectiveness. If the contrasty negative is the result of too much development, then a two-step (divided) Farmer's Reducer treatment will be effective. In any event, even with the most careful handling of the Farmer's Reducer treatment, one must have a good deal of prior experience in order to achieve a negative that will print well—all of which does little or nothing to remedy an immediate need.

If you should ever run into such a negative and have need for a print in a reasonable amount of time, I offer the following as a solution to the problem: first, instead of a *soft* grade of enlarging paper, use a *hard* grade of enlarging paper, say a No. 3 or No. 4. If you lack a hard grade of enlarging paper, you can use your highest contrast filter with a variable contrast paper.

Next mix up a batch of your favorite

paper developer, into which has been placed a small amount of antifog. This chemical is sold under its generic name of benzotriazole, or you can buy a commercial product such as Kodak's Anti-Fog No. 1 and follow the instructions given. Should you use the benzotriazole, it can be added directly (after it has been dissolved in a little hot water) to the *undiluted* developer at the rate of two grams per liter. When the paper developer is diluted for use, it will have the correct amount of antifog agent.

After the paper developer has been prepared, in addition to the normal sec-



No special darkroom equipment was needed to realize this full-scale print made from an excessively contrasty negative. The print shows a full range of tones, with detailed shadows and highlights. Text outlines the simple procedure.

ondary solutions of stop-bath and fixer, place the contrasty negative in your negative carrier and focus it on a sheet of plain paper over which has been placed a sheet of glass or some other nonabsorbent material. Once the proper focus and composition have been achieved, remove the sheet of plain paper and discard it.

Now place the sheet of high contrast paper in the tray of paper developer (in darkroom conditions, naturally) and presoak the unexposed paper for two to three minutes. Next lift the paper by one corner and allow it to drain as much as possible. After the paper has drained, place it on the sheet of glass which is directly under the enlarger. With a sponge or a paper towel, carefully wipe off the excess developer.

At this point you have a sheet of unexposed paper on a sheet of plain glass—the paper having been presoaked with a paper developer. With the enlarger lens stopped down to your usual operating aperture, make an exposure

that would be equivalent to 1/5th of your normal exposure. That is, if your normal exposure is 10 seconds, make an exposure of two seconds.

With the enlarger light now off and the usual red darkroom safelight on, carefully watch the paper. If you have given the print the correct exposure, you can actually see the beginning of detail take place as the developer begins to work on the exposed area. The gradual blackening of the paper will (and should) *only* occur in the shadow areas of the print. No other details should appear. This action can take from a minute up to two minutes, at which point no further blackening can be noticed. This completes the first part of the exposure/development process.

When the action of the first exposure has stopped, you will have created a mask which will protect the shadow areas from additional exposure when a second exposure to light is made. Thus the shadows will not go completely black when the highlights receive their fair share of exposure. To bring out the highlights make a second exposure by turning on the enlarger and allowing the light to burn through the dense negative areas until detail can be seen.

This second exposure is semicritical, and you will have to watch carefully. This can be checked periodically by turning off the enlarger light and watching the image on the paper (under the glow of your darkroom safelight). Continue making the second exposure until the print appears to have the *beginnings* of detail in the densest highlights. Do not continue the exposure until full detail can be seen. *This point is very important!*

When you notice the beginning of detail in the highlight areas, remove the print from the glass "easel" and place it back in the tray of paper developer. The blacks will get the snap you want, and the highlights will develop to their full potential. The result will be a full-scale print with full, snappy shadow detail and textured highlights.

You may have to make more than one print using this procedure until you obtain the results wanted. Remember, the initial exposure is short enough to just bring out details in the shadow areas, and the second exposure (which will be about 10 times longer than the first exposure) will just bring out the highlight details. Finishing development in the tray of developer will complete the process. Once you have established a working program for your own equipment, you can predictably handle high contrast negatives with ease and assurance. It's almost foolproof, requiring only a little more time than usual. □

Asanuma Filters



Superior optics at popular prices.

Asanuma filters offer optical glass which is precision coated and optically flat meaning that both surfaces are precisely parallel.

There is a full line of filters which may be used alone or in combination with each other. They are available in most popular sizes.

We are Japan's oldest and best-known supplier of photo optical equipment with a business built on professional excellence at popular prices. The Japanese people know. You will want to. Please ask your dealer about the quality of our filters.
Asanuma Corporation,
Carson, California 90746.



Optical Excellence in Japan
Since 1871.

OTHER VOICES

SUPER CHEAP COLOR ANALYZER

For the past couple of years I have been reading your magazine with complete satisfaction. I wait eagerly every month for the latest copy to hit the newsstands to *really* see what's new in photography.

Since I have gained much by reading PhotoGraphic, I thought that turnabout was fair play and offer you and your readers what I think is a real "goodie."

Sometime ago, I was making some prints from slides, and after about eight attempts to get the proper filtration for a sunset and getting nowhere, I decided to try an idea that came as a flash to my mind. First, let me give you some idea as to the filter pack suggested by the chemical manufacturer and what I ended up with. The manufacturer called for a 75 magenta and a 15 yellow; I ended up with a 120 cyan and a 15 yellow—my eighth try hadn't even gotten me out of the magenta filtration!

My idea was simply to *zero* all the dials on my Durst color head and dial in the colors that would produce the picture that looked most like the slide. The Durst people provide a bright white table with their enlarger; however, any bright white table will work.

This technique will not correct for changes in the emulsion from one paper to the next, but it will get you in the ball park faster for *any* print. As for correct exposure, you simply correct via the filtration that you *then* have in your present filter pack. The base filter (UV cutoff and heat-absorbing glass, etc.) must be left in. I'm sure the same method will work by adding or subtracting filters via a filter drawer, but since I no longer have to use that method, I didn't experiment further. I'll leave that to interested readers to test.

William W. Vinter
San Mateo, California

DEVOTEE

This short note is simply to tell you that of all the photography magazines I've seen, PhotoGraphic is by far the best. Others might be thicker, but from what I have read, none of them has as many useful and interesting articles as yours.

Thank you for a fine magazine in this age in which most seem to be filled with ads and rather useless information.

Gerard T. Findlan
Euclid, Ohio

SEEING IS BELIEVING

The article, "POP Solarization," in the January, 1976 issue was excellent. I would like to thank Derryl G. Berry for this easy-to-follow article. This was as good as a special present under the tree from PhotoGraphic. I've read several other articles on solarization in other magazines, but all were unsuccessful for me. As you can see, I achieved pleasing results, and it was all very easy!

Jim Schnepf
Shawano, Wisconsin



CORRECTED DIMENSIONS

I would like to mention a few corrections that might clarify some of the content of my article, "Plumbing the Depths," in the February, 1976 issue. Photo reference, page 65, sixth line down, center column should read, "see photo No. 9."

In addition, the dimension for the width of the sink stand in Diagram No. 3 should read 23 3/4 inches, not 20 3/4 inches. The width of the bottom panel in Diagram No. 1 is 24 inches. The width of the side panels and accessory shelf is 11 3/4 inches.

I apologize for the errors; however, they are of such a nature that they should not prevent readers from properly constructing the sink.

Walt Seng
Pittsburgh, Pennsylvania

INSIGHT GAINED

Congratulations, I'd given up ever again seeing an amateur's photography magazine worth anything. I do hope PhotoGraphic fills the promises it seems to be making. I love the style! All in

(Continued on page 12)



Enjoy the newest from the oldest

ASANUMA AUTOMATIC 70-220MM F3.5 MULTI-COATED MACRO-ZOOM FIXED MOUNT LENS

SPECIFICATIONS

Optical Construction	15 elements—12 groups
Angle of Acceptance	34—11 degrees
Aperture Range	f3.5—f22
Minimum Focusing Distance (Macro)	1 inch
Minimum Focusing Distance (Normal)	5 feet
Length	7¼ inches
Maximum Barrel Diameter	3¼ inches
Weight	44½ ounces
Accessory Size	72mm
Lens Hood	Built in

ASANUMA AUTOMATIC 35-105MM F3.5 MULTI-COATED MACRO-ZOOM FIXED MOUNT LENS

SPECIFICATIONS

Optical Construction	13 elements—11 groups
Angle of Acceptance	62—23 degrees
Aperture Range	f3.5—f16
Minimum Focusing Distance (Macro)	6¼ inches
Minimum Focusing Distance (Normal)	5 feet
Length	4 inches
Maximum Barrel Diameter	3 inches
Weight	24½ ounces
Accessory Size	72mm

Asanuma.

New in the United States. Old in Japan.

We are Japan's oldest and best known name in photo-optical equipment.

Over the years, in the knowing eyes of the Japanese customer, this can only mean professional quality at popular prices.

As witness our newest:

The Asanuma Macro Focusing Zoom Lenses.

The 70-220mm (with 15 elements and 12 groups) will focus clear and sharp to 1 inch.

The 35-105mm (with 13 elements and 11 groups) will focus clear and sharp to 6 inches.

Multi-coated optics reduce flare and provide high light transmission.

The lenses are lightweight and versatile.

One can take the place of three.



Asanuma Corporation
1639 East Del Amo Blvd., Carson, Calif. 90746

Our promise is simple: You'll take better color pictures.

TIME
LIFE
BOOKS

Examine COLOR for 10 days free

Now is the time to dare, to experiment, to go out and capture the world any way you care to see it. Today's cameras and color films can give you any result you want!

And this is an invitation for you to go out and try it all. To learn everything color can do . . . and master the techniques you need for doing it. How? By spending ten free days with the volume *Color* . . . your introduction to the famous LIFE Library of Photography.

In *Color*, you'll learn how to get great color pictures indoors and out . . . in mist or in rain . . . at high noon or in twilight. How to keep color subtle . . . or go wild with color for its own sake. How to create the most stunning surrealistic effects . . . even how to change colors to their exact opposites in the dark-room!

You'll have all the technical information you need, explained in the famous clear style of TIME-LIFE BOOKS. You'll learn how to choose the right filters . . . how to choose the right color film . . . how to process your own color film and prints.

You'll see the color masterpieces taken by other photographers and learn how they were created. Whole new worlds of color photography will be opened for you . . . and as you see each one, you'll learn just what to do to make it yours!

**The most complete source
of photographic know-how**

Like *Color*, every volume of the LIFE Library of Photography gives you the kind of information that will help you explore your photographic potential.

TIME-LIFE BOOKS TIME & LIFE BLDG., CHICAGO, ILL. 60611

Yes, I would like to examine *Color*. Please send it to me — together with the illustrated *Photographer's Handbook* — for 10 days' free examination and enter my subscription to the LIFE Library of Photography. If I decide to keep *Color*, I will pay \$7.95 (\$8.95 in Canada) plus shipping and handling. I then will receive future volumes in the LIFE Library of Photography series, shipped a volume at a time approximately every other month. Each is \$7.95 (\$8.95 in Canada) plus shipping and handling and comes on a 10-day free examination basis. There is no minimum number of books that I must buy, and I may cancel my subscription at any time simply by notifying you.

If I do not choose to keep *Color*, I will return it within 10 days, my subscription for future volumes will be cancelled, and I will not be under any further obligation. The illustrated *Photographer's Handbook* is mine to keep without obligation.

BMBYZ1

Name (Please print)

Address

City

State Zip



In *Travel Photography*, for example, you'll learn how to go far beyond the traditional "post-card" shots . . . how to shoot in dark church interiors . . . how to capture the real mood of every city and country you visit.



Enjoy field trips with your camera? In *Photographing Nature*, you'll discover ways of capturing animals in the wild with startling close-ups . . . or preserving the tiniest detail of a flower.



Want to capture a special mood — to tell people what words alone cannot say? *The Art of Photography* will give you some very practical ways of photographing the most elusive image.



And, if you would like to try you hand at darkroom work, *The Print* will give you all the information and background you need — and show you how to use the darkroom creatively as well as correctly.

**YOURS FREE
when you
send for
COLOR**



This valuable 64-page pocket-sized manual contains hundreds of tips and ideas for taking and making better pictures. Includes 150 photographs and drawings, dozens of charts and tables.

Examine *Color* for 10 days free

There's really no way for you to appreciate how much the LIFE Library of Photography can mean to your picture-taking — and how far it will take you — without seeing a volume for yourself. (*Modern Photography* called the LIFE Library of Photography "awesome!")

That's why we'd like to send you the volume *Color* to examine at your leisure for 10 days.

You may then either return *Color* without further obligation, or keep it for only \$7.95 (\$8.95 in Canada), plus shipping and handling. By keeping it, you'll receive other volumes in the series, one approximately every other month, with the same 10-day free examination privilege and at the same price. You are not obligated to take any specific number of volumes and you may cancel at any time. Mail the order form now.

Modern Photography Magazine says: "Probably the most useful, easy-reading, well-illustrated, interesting collection of books on photography printed since Kodak discovered the Data Book . . . awesome."

Photographic Magazine says: "From beginner to professional, the LIFE Library of Photography has something for every photographer to 'sink his teeth into'; beautifully illustrated surveys of every single important area in photography."

RAW COLOR



MOODY COLOR



SENSUOUS COLOR



PROUD COLOR



ABSTRACT COLOR



A few of the things in COLOR

- How to use filters to get the "right" colors in the "wrong" light
- Why "snow shadows" often appear blue and what you can do about it
- "Color temperature" — the vital tool often overlooked
- The psychological meaning of colors
- What every color photographer must know about weather
- Tips for taking pictures in the magic of early morning
- A simple rule that professionals use to get fantastic pictures in mist
- The secret of mastering artificial light
- "The pitfall of unwanted color" — the trap that trips even professionals
- How to photograph inanimate objects — and make them come alive!
- When, where and how to photograph animals and pets
- The meticulous art of shooting small flowers
- How to copy works of art in accurate color
- How photographer Ernst Haas uses color daringly
- How to process your own color pictures at home
- Using color test wedges in the darkroom
- How to make color contact sheets
- Synthetic color — for the photographer who has the courage to try anything
- Posterization — a new approach way to surrealism

- Actual Book Size: 10 1/4" x 10 1/4"
- Hard cover, silver-stamped black cloth binding
- Each book contains more than 200 pages with as many as 300 monochrome and color pictures

Among other volumes in the
LIFE Library of Photography



RESTLESS COLOR



OTHER VOICES

(Continued from page 6)

all, it's a very refreshing departure from the pap I've reluctantly become accustomed to reading.

"Meter the Negative" (see December, 1975 issue) really tickled me. This sort of thing—sure, but what do you do with your enlarger now that you're stuck on this desert island—always appeals to me.

Of course, I haven't found a 4K-ohm, 5-watt, wire-wound potentiometer. On the other hand, I've come across scads of 5K-ohm, 4-watt, wire-wound potentiometers, and I bought one. Since I'm not a genius, it was easy to assure myself that there'd be no serious difference from design predictions if I use the pot I bought.

So much for technique. Actually, the minimum voltage across the lamp should be almost as much, using my potentiometer, as with the one mentioned in the article. But the most fascinating thing is that if I build the photometer and gray-scaler, I can hardly avoid knowing what it's all about—that is, just what "hard" and "soft" printing papers are. So even if I toss the little gem into the garbage after using it twice, the insight gained will probably be well worth the total effort involved.

Again, thanks for a very informative and interesting magazine.

H.M. Hurlburt
Rosemead, California

ARTIST'S INSPIRATION

Over the last 10 years I have had an active but amateur interest in photography. A little over a year ago I read my first issue of *PhotoGraphic*. I promptly subscribed. Why? I was lost in the sameness, commercialism and confusion that reigned in the other photographic publications. Now a magazine must have commercial advertisements to survive, but as you show us, that is not *your* primary reason for existing.

Your features have helped me improve my contribution to our art. Readily usable and tangible ideas and techniques are presented clearly and interestingly. The portfolios give insights which expand and inspire both the mind and eye.

I also must praise the existence of "Gallery." The opportunity for anyone of talent, without a big name or connections, to have a photograph published is offered. This opportunity must come from intelligent management and from your human approach to furthering and encouraging the artist and the art. I have only one request and that is to add a color section to "Gallery."

I have just renewed my subscription, and I'm sure I'll continue to do so.

Russel W. Bickers
Sleepy Hollow, California



FINALLY!

Omega enlargers for people who thought they couldn't afford an Omega enlarger.

For those setting up their first darkroom, the question has always been "Should I start with a low-cost enlarger, or should I invest in an Omega?" It's no longer a decision you have to make. Now, virtually anyone can afford to start with an Omega, long considered the finest the industry has to offer.

It's the Omega System 600, for all film formats from Minox to 2 1/4" x 2 1/4". Product of the innovative engineering and know-how acquired by forty years of leadership in enlarger technology, the Omega System 600 offers unbelievably low cost, without compromising traditional Omega quality and performance capability. Dollar for dollar, this newest Omega system represents the very best buy anywhere.

Two basic enlarger models and a wide range of accessories make up the modular system. If your primary interest is black & white, choose the Omega B600 Condenser enlarger. Of course, it prints color as well, with its double optical glass condensers and built-in filter drawer. But if you'll print more color than black & white, the Chromega B600 Dichroic Enlarger puts you in business in a most professional way, using the very same Chromega B Dichroic lamphouse of costlier Omegas.

And if you're simply undecided, buy either one with the confidence that comes from knowing you have a fully modular system, which permits you to change from the condenser lamphouse to the dichroic, or vice versa, at any time. Whatever your needs, there's an Omega enlarger for you in the System 600.

Talk about an accessory system! A full range of Omega B precision dustless film carriers is available for all popular formats. (Many professionals consider the film carrier the most critical component of their enlarger system.) Plus a mounted slide carrier for reversal printing, and a universal glass carrier should you prefer it. Also, a swing-away under-the-lens filter holder, heat absorbing glass, supplementary condenser for miniature formats, portrait filter. And a complete line of analyzers, timers, easels and other darkroom accessories. All available as you need them.

See this most remarkable new enlarger system at your authorized Omega dealer. Omega Division, Berkey Marketing Companies, Inc., P.O. Box 1060, Woodside, New York 11377.



THE INCOMPARABLE NEW OMEGA SYSTEM 600



OMEGA 
The Greatest Name In Your Darkroom

PRODUCT PROOF SHEET



PRACTICAL POSTERS

The Big Dipper Print Processor, top, and Print Processor II, bottom, offer an efficient means of processing poster-size prints up to 30x50 inches. Developing trays are trough shaped and require only 32 ounces of each solution. The units are designed so that the emulsion surface of the print passes vertically through the chemical solutions, thereby requiring less space to operate. Continuous viewing of the print surface gives maximum control over the precise extent of development. The "water-wash" adapter included makes print washing as easy as turning on the faucet. Stainless steel edge-plates make handling, exposing, processing and drying easy. The Big Dipper Print Processor, \$119 plus \$5.50 postage and handling, includes baked enamel steel base with anodized aluminum telescoping uprights, crank and bar assemblies plus polyvinyl chloride (p.v.c.) roller, one set of stainless steel edge-plates, one p.v.c. immersion drum, four polystyrene troughs (one with water-wash adapter) and operating instructions. The Big Dipper Print Processor II, \$29.95 plus \$3 postage and handling, contains all items except the base, upright and roller assembly; the edge-plates come equipped with handgrips. Contact Big Dipper Photo Products, 67 Center Street, Clinton, New Jersey 08809, for details. New Jersey residents add five-percent sales tax.



PICTURES PRONTO! BY POLAROID

Pronto!, a low-cost, nonfolding Polaroid Land camera that utilizes SX-70 color film, has been introduced by Polaroid Corporation. Once the camera is focused, exposure is automatically controlled over a broad range of scene brightnesses, including flash. Pronto! also offers automatic "fill-flash" capability—in fill-flash mode, the circuitry triggers the flash after a delay automatically computed by the electronics which read the existing light level. A silicon diode photocell coupled to three integrated circuits controls the exposure. Exposure readings are center-weighted. Special interlock circuits prevent exposure when forward-facing side of flash bar is exhausted; also, electronic control insures that a flash will not fire nor camera operate when picture counter indicates that the film pack is empty. The three-blade sliding shutter is automatically adjusted from 1/125 to one second, with automatic aperture adjustments from f/9.4 to f/22. A lighten/darken control permits exposure modification. Pronto! has a bright Galilean viewfinder and a focus range from three feet to infinity, which is adjusted using a distance scale on the lens bezel. The 116mm three-element plastic optic was designed and manufactured by Polaroid. Pronto! also features an adjustable carrying strap, picture counter and a list price of \$66. An accessory kit including a tripod mount, cable release and self-timer has a list price of \$21.95; soft vinyl case is \$4.95, and compartment case for camera and accessories is \$11.95. Camera is also available in a complete starter set—Pronto! Plus, \$85—which includes Pronto!, pack of SX-70 film, one flashbar, soft vinyl carrying case and a black-finish pocket photo album. Contact Polaroid Corporation, 55 Technology Square, Cambridge, Massachusetts 02139.



NEW TIMER INTRODUCED BY EPOI/PTP

The EPOI 1000/Timer Model 2 features two decade switches plus a range-multiplier switch. With the multiplier switch in the 1X setting, range of the timer is one to 100 seconds in one-second increments; at the 1/10X setting the range is .1 to 10 seconds in .1-second increments. Operation is fully automatic. Once the interval is set, the manual start button or a plug-in foot switch will initiate the preselected interval. The timer is rated at 1000 watts for continuous duty and 1500 watts for intermittent duty. Size is 9½x7¼x4¼ inches. EPOI 1000/Timer Model 2 has a list price of \$129. Additional information is available from Photo-Technical Products Group, Ehrenreich Photo-Optical Industries, Inc., 623 Stewart Avenue, Garden City, New York 11530.



CUSHION YOUR LENSES

Air Shield is a lens pouch that combines the protective features of a hard case with the flexibility of a soft pouch. The protective walls of the Air Shield pouch inflate with just a few puffs and resemble a mini-air mattress providing an air cushion for lenses. When not in use, the pouch may be deflated and folded to fit into a pocket. Constructed of durable grained vinyl, Air Shield comes in three sizes: small and medium which retail for \$4.95 and large which retails for \$5.95. In addition, Sima Products Corporation, 7380 Lincoln Avenue, Lincolnwood, Illinois 60466, has designed a rectangular utility case that holds light meters, camera bodies, strobes and other delicate equipment.

(Continued on page 17)

Please mention PhotoGraphic Magazine when inquiring to manufacturers about the items listed in "Product Proof Sheet."

New product information should be sent to the attention of Karen Geller, Managing Editor, PhotoGraphic Magazine, 8490 Sunset Boulevard, Los Angeles, California 90069.

Beauty.
With
down-to-earth
performance.



Form follows function. So before we made Kodak Carousel custom H projectors beautiful, we put the emphasis on performance.

With such time-proven, dependable features as gentle gravity-feed operation, which is as simple as an apple falling off a tree.

They're also whisper-quiet. With a lamp that's easy to change. And with features such as automatic focusing and timing, remote control, and brightness control from which to choose.

And all 2 x 2 Kodak Carousel projectors now have as standard the curved-field Kodak projection Ektanar C lens. It's designed to give improved edge-to-edge projection sharpness by compensating for film curvature that occurs in cardboard- and plastic-mounted slides. The 102 mm (4") f/2.8 version is standard. Other curved-field and flat-field lenses are optional.

The Kodak Carousel custom 840H projector shown, which includes the 102 mm f/2.8 Ektanar C lens, is priced at less than \$227. Other models start at less than \$85.

Our point: There's far more to Kodak Carousel custom H projectors than meets the eye. And, if you're as fussy about the quality of your projector as you are about the quality of your slides, they're worth looking into. Check all the features at your photo dealer's.

Kodak Carousel custom H projectors
More than a pretty face.



Prices are subject to change without notice.



ZOOM VIVITAR

Introducing dual focusing in a zoom lens. Hitherto, in an 85-205mm zoom lens you could choose from 121 focal lengths to frame the subject. Now, you have two separate focusing ranges: 85-205mm or a macro focusing range. And, as our illustration shows, you can even use some of these focal lengths simultaneously. Both shots are full frame 35mm, uncropped. Most photographers freeze an instant of time. But in this shot of the band a Zoom Vivitar captured movement and the passage of time. The photographer zoomed throughout the exposure. Listen! You can almost hear "The Stars and Stripes Forever." Then the photographer shifted his Zoom Vivitar into its macro focusing mode for a brassy, close-up of horn valves. The new Zoom Vivitar combines reliability, fine resolution and high contrast. Before Vivitar taught computers to design lenses, this sort of performance by a zoom lens was either impossible or impossibly expensive. Now it's here and affordable. The Zoom Vivitar fits most popular cameras including Canon, Mamiya/Sekor, Minolta, Nikon, Nikkormat, Olympus OM, Pentax, Konica and Vivitar.

Vivitar 85-205mm
F3.8 automatic
close focusing
zoom lens



Specifications



Optical construction	13 elements in 9 groups
Angle of acceptance	28° at 85mm to 12° at 205mm
Aperture range	f3.8 to f22 (EE coupled lenses to f16 only)
Minimum focusing distance from front element:	
In Zoom	5'7" (1.7m)
In close focusing mode	12½" (31.8cm)
Weight	28 ounces (793.8 gr)
Length at ∞	7¼" (184.2mm)
Maximum barrel diameter	2½" (63.5mm)
Accessory size	58mm

Vivitar®

PRODUCT PROOF SHEET (Continued from page 14)



BARN DOORS FOR BOUNCE BY REFLECTASOL

Larson Barn Doors give complete directional control of bounce lighting for Reflectasol systems. Constructed of black, durable plastic and packaged in sets of two, the Barn Doors are held in place by slipping special mounting tabs under the Reflectasol frame. Lightweight, adjustable and portable, sizes range from 42, 36, 27 and 20 inches for the Square line and 52, 42 and 32 inches for the Hex line. Suggested list prices range from \$19.95 to \$29.95. Contact Larson Enterprises, Inc., 18170 Euclid Street, P.O. Box 8705, Fountain Valley, California 92708.



PONDER & BEST INTRODUCES NEW OLYMPUS COMPACT RANGEFINDER

Ponder & Best, Inc., has introduced a full-frame 35mm rangefinder, Olympus 35RD, that features both automatic operation and manual override options. It has an automatic shutter-speed-preferred, CdS-controlled exposure system, automatic flash control, speeds of 1/500 to ½ second plus B, X flash sync and a built-in hot shoe. The viewfinder offers a bright frame with parallax correction marks, f-stop scale and red zone for underexposure warning. If there is insufficient light or too much light for proper exposure, a shutter lock mechanism is automatically activated. The CdS system operates over a film speed range of ASA 25 to 800. The camera has single-stroke film advance lever with automatic double-exposure and double-winding prevention, a 10-second delay self-timer and an f/1.7-16 Zuiko lens of six elements in four groups with a minimum focus distance of 2.8 feet. Weight is 17 ounces, size is 4½x2¾x4¼ inches. Olympus 35RD comes complete with pouch case, lens cap, shoulder strap and battery at a suggested list price of \$199.95. Contact Ponder & Best, Inc., 1630 Stewart Street, Santa Monica, California 90406.



NEW MINOLTA POCKET CAMERAS OFFER FLASH CONVENIENCE

The Minolta Bicentennial Series, Pocket Autopak models 270, 250 and 200, features a hot shoe and the ease and economy of flash shooting with the Minolta Pocket Flash 25.

Pocket Autopak 270, above, provides automatic exposure control with a shutter speed range of 1/330 to 10 seconds, focusing from infinity to 1.6 feet with built-in close-up lens and a lens cover that locks the shutter. The lens is a 26mm f/3.5 coated Rokkor, four elements in three groups. Viewfinder has five zone-focusing symbols, bright frame, used flash and low-light/battery-check signals. Suggested list price for camera, neckstrap and flash is \$110.

Pocket Autopak 250 has a 26mm f/8 coated Rokkor lens, three elements in three groups, shutter-locking lens cover and two-position zone focusing (3-6 feet and 6 feet to infinity) visible in viewfinder with used flash and low-light/battery-check lamp. Price of the camera, wrist strap and flash is \$90.

Pocket Autopak 200 has a 26mm f/8 coated Rokkor lens, three elements in three groups with shutter-locking cover and a mechanical shutter with speeds of 1/125 for daylight and flash and 1/50 for Magicubes. Price of camera, wrist strap and flash is \$65.

Contact Minolta Corporation, 101 Williams Drive, Ramsey, New Jersey 07446.



A FLASH FOR POLAROID

Lenmar Enterprises offers the Nissin FSX flash for Polaroid SX-70 cameras. The unit has the same light output as a flashbar and operates on four AA batteries housed under the SX-70 body. All camera functions operate normally and easily with the compact, lightweight flash attached. The self-storing FSX flash has a tripod socket on the bottom, ready-light and open-flash test button. Suggested retail price is \$39.95. Contact Lenmar Enterprises, 334 Darrow Avenue, Evanston, Illinois 60202.

(Continued on page 94)



Bringing the Beauty Indoors

What Joey Fischer is doing is a little like magic. It's amazing, and it makes people happy.

He has embarked on a conquest of inner space, bringing the beauty of the natural world indoors as an architectural building medium. His work differs from that of those using photography in interior graphic design. He makes gigantic trans-illuminated murals on Cibachrome, ceramic tiles with photographs printed directly on them and glazed and even photographic rugs. Some day you may walk down a Fischer corridor with cloud-filled skies overhead, autumn woods on either side and grassy meadows underfoot.

His largest mural to date from a single transparency is one twelve by thirty feet. Needless to say, he depends on the quality of Canon optics to get the kind of images that can stand going this large and still look great. "I've never experienced optics like Canon's before" he says, "this is borne out by the fact that I'm using them for my huge images. The lenses really hold an image together. It's rather incredible."

Joey uses almost all of the focal lengths among the forty Canon FD and FL series lenses, but one of his favorites is the FL 300mm f/5.6 FLUORITE. Canon pioneered the production of artificial calcium fluoride ('fluorite') elements, available only in Canon telephotos. These elements significantly reduce chromatic aberration, because they have a high refractive index but low dispersion. In essence, Canon's fluorite



lenses (FL 500mm f/5.6 FLUORITE and FD 300mm f/2.8 S.S.C. FLUORITE) set new standards for lenses of their focal lengths, with near-apochromatic levels of performance. An additional bonus of fluorite construction is a significant reduction in overall

size and weight, compared to conventional designs.

He uses Kodak photomicrography film frequently, and attributes much of his success with it to the F-1's superb through-the-lens metering system. "I rely heavily on the metering system in the camera—to the point where I no longer use my trusty handheld meter. Its sensitivity and accuracy are amazing. I especially like the selectivity, because outdoors, where the light can't be controlled, contrast is often so great that pinpoint exposures are absolutely essential."

Although he does work for interior designers and architects dealing with all types of building projects, he is especially interested in doing work for hospitals. One of his most recent projects to reach completion was a six-and-one-half foot by thirty-five foot "mosaic" of transparencies for Glendale California's Mercy Hospital. Since its completion, it has been a source of comfort and inspiration to all the patients who have seen it. Fischer feels that "...my work in hospitals has an emotionally healing power for the sick. It lets the people there walk into a more beautiful world, taking their minds from their illnesses."

He sees the F-1 system in its best light as a translating vehicle, for getting the images he sees in nature onto film with as little lost as possible. So realistically, in fact, that while carrying a photo-tile of a flower outdoors, a bee landed on it twice. And tried to pollinate it. "That" he muses, "is realistic!"

Canon[®] F-1



Canon USA, Inc., 10 Nevada Drive, Lake Success, New York 11040. Canon USA, Inc., 140 Industrial Drive, Elmhurst, Illinois 60126.

Canon USA, Inc., 123 Paulanne Avenue East, Costa Mesa, California 92626. Canon USA, Inc., Bldg. B-2, 1050 Ala Moana Blvd., Honolulu, Hawaii 96814. Canon Optics & Business Machines Canada, Ltd., Ontario.

CLUB CLOSE-UPS

JOAN YARFITZ

ALL YOU HAVE TO DO IS ASK



□ Just about every camera club in existence in this country puts out a monthly newsletter. Its purposes are multifold—to inform members of upcoming events, to introduce new members,

to give notice of competitions—just to name a few. Some bulletins are only a page long, printed by hand or typewritten by a hardworking club secretary; others are very sophisticated affairs running eight or more pages, illustrated and printed by a professional printing outfit. But no matter how humble or elaborate they might be, they all serve the same basic purposes—to keep club members apprised of the workings and happenings of the group and to maintain active member enthusiasm.

From my reading of hundreds of these newsletters it has become obvious that some clubs accomplish these ends in a more effective manner than others. What elements contribute to making one club's publication more readable, enjoyable and informative than others? Some bulletins include more than just announcements of competitions and chatty commentary; the most interesting provide informative, technical how-to information.

"To clean those stained developing trays pour in some acetic acid solution (six ounces of 28-percent solution), add a bit of saturated potassium permanganate solution (six ounces), slosh around in the tray, empty and refill with print fixer, then rinse thoroughly.

"Preserve a tray of paper developer until the next printing session by covering the tray with Saran Wrap or Handi-Wrap. Place the plastic film gently on the solution's surface. Make sure you have enough material to touch and cling to the sides of the tray. If airbells form under the plastic, move them to the side and let them escape; in this way no air will oxidize the developer. A tray of developer treated in this manner should be good for one or two days of storage" (*The Focal Point*, Springfield Photographic Society, June 1974).

"If you are trying a new film and have no data on the amount of time it should be developed in your favorite soup, and you don't want to change to

a different developer, what can you do to insure proper development? 1. Cut off a small piece of film; 2. expose the film to white light (not sunlight); 3. dunk half of the film in developer, start timer; 4. at the first visible darkening of the submerged film, stop timer; 5. multiply the time interval by 20, and you have the time required to develop your film to normal contrast.

"I suggest that you use a stopwatch for accuracy and, in addition, keep these possible variations in mind: 1. for



panchromatic film in ultra-fine-grain developer, use a factor of 30; 2. if the film is out of date, try a factor of 30. Be careful to use your developer as you usually would—normal agitation and temperature" (*The Focal Point*, Springfield Photographic Society, May 1974).

"To add variety to your enlarged prints stretch and tack a piece of Fiberglass curtain material over a wood frame and lay on top of your paper. For a tapestry effect raise it a few inches above the paper. For a softening effect place a piece of nonglare glass on top of the paper. A piece of nylon stocking stretched over an embroidery hoop makes a good variable diffuser" (*The Filter*, Greater Lynn Camera Club, Inc., January 1976).

"Check your shutter speeds using a TV set. The camera should be one with a focal-plane shutter to use this system. Load the camera with Kodak Tri-X Film and mount it on a tripod placed in front of the TV so that the TV picture fills the frame. It's probably best to adjust the set so that the image is black-and-white, with high brightness and low contrast. The TV image should be carefully focused on, as photographs will be made at maximum aperture.

"Now simply make exposures at each of the shutter speed settings and develop the film. By counting the number of lines in the negative of the TV image, you can calculate the actual exposure time used, multiplying the number of lines by 1/15,750. For example, 30 TV lines indicate 1/525 second; 140 TV lines indicate 1/113 second; 260 lines indicate 1/61 second" (*The Pictorialist*,

The Photo Pictorialists of Milwaukee, April 1975).

"Nothing adds more impact and depth to your subject than the curve because it leads your eye into the picture. The S curve is the most interesting curve possible. S-shaped roads, fences and rivers can dominate a pictorial composition. They generally lead the eye from the foreground to the background, but make sure that the curve line leads to a vital, interesting area. This type of composition will give the eye something worthwhile to study if you plan it right.

"The curved line should not terminate at the edge of the frame because it will lead the eye out of the picture. Take advantage of curved lines present to give your photos depth and to lead the eye to the center of interest" (*Light*, Lowell Camera Club, December 1974).

"A No. 1 red filter used with panchromatic or infrared films gives maximum contrast with dramatic sky effects. To get simulated moonlight effects in daylight, use slight underexposure. When using this filter, increase three stops for dramatic sky effects and underexpose approximately two stops for moon effects, depending on the weather" (*The Filter*, Greater Lynn Camera Club, October 1975).

"The accompanying table shows how tele-converters affect f-stops. With through-the-lens metering cameras many of the exposures will be corrected by the meter. For cameras having external meters or with handheld meters use the f-stops marked on your lens.

"With a 2X tele-converter, if the marked opening on your lens is:
f/1.4 2 2.8 4 5.6 8 11 16 22 32
The actual f-value you should use is:
f/2.8 4 5.6 8 11 16 22 32 45 64

"With a 3X tele-converter, if the marked opening on your lens is:
f/1.4 2 2.8 4 5.6 8 11 16 22 32
The actual f-value you should use is:
f/4 5.6 8 11 16 22 32 45 64 90"
(*Depth of Field*, Regina Guild of Color Photography, January 1976).

These quotes are just a small sampling of the many useful bits of technical information included in club bulletins, provided for members by editors who understand the unique position of the club newsletter, both as a valuable means of communication and a powerful medium for maintaining club cohesiveness. Your club, too, can easily add greater impact to its monthly publication—look to the ranks of club members for a wealth of technical how-to information, ranging from darkroom techniques to outdoor photography. All you have to do is ask, and your club bulletin is guaranteed to take on an exciting new look. □

Camera clubs please note: "Contest News" can be found on page 98.

Kodak introduces talking instructions on how to process your own negatives, slides, and color or black-and-white prints.



LISTEN

to  **KODEWORD**  Cassettes.

KODEWORD—Kodak's new Darkroom Audio Cassette program is a do-it-yourself, step-by-step, second-by-second series of tapes (plus printed instructions) on darkroom processing.

Now you can enjoy all the fun, satisfaction, and savings of this whole dimension of photography. Easily.

Each tape is like having a personal, professional coach leading you in the darkroom. Teaching you what to do. How. When. For how long.

Just select one or more of the six cassette tape packages on how to process: Black-and-white Film and Prints (TC-1); EKTACHROME Slides (TC-2); Color Prints in Tubes, from slides or negatives (TC-3); Color Negatives (TC-4); Color Prints in KODAK Rapid Color Processors

(TC-5); and Color Prints in Trays (TC-6). Read the instructions. Check the few materials needed, listed on the package.

Then play the tape on a cassette player while you process. And discover how easily, quickly, and economically you can become a complete photographer.

The reasonable costs may surprise you. And the savings and pure enjoyment may amaze you. Tapes and photographic supplies are available from many photo dealers. Get details. And mail this coupon to Kodak for a \$1 refund on your purchase of a KODEWORD tape and chemical kit.



 **KODEWORD** 

Audio Cassette Program.

\$1 REFUND



This coupon is worth a \$1 refund on the purchase of both a KODEWORD Darkroom Audio Cassette and a KODAK chemical product. Clip and mail, with any one product title from a Kodak chemical package for the tape you purchased, and the owner registration card included with your KODEWORD tape, to: Eastman Kodak Company, Box 412-L-29, Rochester, N.Y. 14850.

OFFER EXPIRES JUNE 30, 1976

No refunds to dealers. Void if restricted, taxed, or forbidden by law.

4-197

POINT SOURCE

STEVEN ROSENBAUM

THERE'S NO SCHOOL LIKE AN OLD SCHOOL

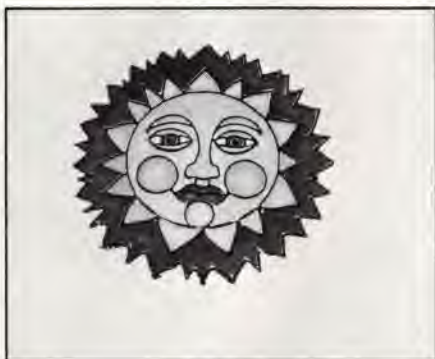


□ Would you travel an average distance of 877 miles to spend an above-average week studying photography with a working pro? Last year more than 1100 people did just that. Where? At the Winona School of Professional Photography, in Winona Lake, Indiana. The school is the educational arm of the Professional Photographers of America, Inc. (PPA), and courses in various aspects of photography have been offered there from May through September for over a half a century. The faculty consists of working professionals who take time from their normal business endeavors to spend a concentrated week teaching a course at Winona. The instructors are selected not only for their professional competence but for their ability to share this knowledge with others as well. During the Winona season, courses start each Sunday and continue through to the following Friday. Just about all waking time is spent with photography; a typical day starts at 8 a.m. and finishes at 10 p.m. with meal breaks in between.

Classes are a combination of lecture/demonstrations, local field trips and studio or darkroom sessions, depending on the course selected. Most classes are small enough to allow for informal feedback between the students and faculty. In any case, while the formal *teaching* may be governed by the clock, the *learning* at Winona is not. After-hours and during meal breaks, there is usually ample time to form into even smaller groups and continue informally.

While the Winona School of Professional Photography is operated by the PPA, you do *not* have to be a member to enroll in classes. Many of the courses are open to anyone seeking to upgrade their professional skills. Some courses, like the two-week basic session (course No. 101), Introduction to Professional Photography, are designed for those who are interested in pursuing a career in photography. Still other sessions offer specialized instruction, like course No. 701, Law Enforcement Photography, which is limited to members of law enforcement and investigative agencies.

As the course schedule describes it, course No. 520, Small Negative Printing and Lab Techniques, is "a black-and-white printing course for the photographer or technician concerned with high quality print production from 35mm and 2 1/4 x 2 1/4-format negatives." However, my interest in this course goes beyond



2 Both of these prints, showing a window decoration against an evenly lit sky background, were made from the same negative. Photo No. 1 is a straight print made from the negative, while Photo No. 2 incorporates a "white-light burning-in" technique for emphasis, as explained in text.

the description. This year, for the third year in a row, I will be coconstructing course No. 520 at Winona. While the concentrated week-long workshop schedule is physically exhausting, I have found the experience highly rewarding.

Based on my own impressions in the classroom and confirmed by student questionnaires submitted after the course, the level of student enthusiasm at Winona is high. Many past participants have offered suggestions in class based on their own experiences, which were not only of interest to the other students but to myself as well. Teaching/learning is really a two-way street, and the following technique is based upon one student's suggestion:

You may occasionally decide to utilize a "white-light burning-in" technique when printing a negative. This technique is not new, but the following suggestion makes it much simpler to

use. White-light burning-in requires that the negative be removed from the enlarger *after* the initial exposure has been made on your paper. Then without moving the paper and by using just the white light from the enlarger coming through the empty negative carrier, an additional exposure is made over a portion of the paper. White-light burning-in or "flashing" is not a substitute for normal burning-in, where the negative remains in place during the additional exposure time. It is a supplementary technique which offers several advantages.

Where you intend to create a totally different mood in a photograph, by exaggerating the burning-in to an *extreme* (as in the case of the accompanying illustrations), this method is preferred, since a more uniform tone can be created because the original negative does not interfere with the light striking the paper. Also since there is no negative in place, the effect is more striking because the tone produced is grainless. Used locally, this technique can subdue distracting bright areas in a print, which might take forever to tone down with conventional techniques.

Normally the technique is difficult to control, since there is no way to see the image exposed on the paper until the print is processed. By not seeing the initial exposure made from the negative, you have only your memory to guide you when burning-in with white light.

For a variation in this technique, place a sheet of clear acetate (available from art supply stores) over the paper after the initial exposure has been made. Outline the subject on the acetate using a black grease pencil (China Marker). This can be done with the red viewing filter over the enlarging lens to prevent additional exposure when marking the acetate. Note: a black grease pencil is recommended since a red one would make viewing difficult under the red filter of your enlarger.

Remove the negative, replace the empty negative carrier and make your white-light burn through the acetate overlay. Be careful to allow the light to reach only the paper outside of the grease pencil guidelines, otherwise the lines will print. Since the white light is much more intense than the light which passes through your negative, stop the enlarging lens down two or three additional stops to gain some more control with this technique.

If you would like to receive a copy of the Winona course schedule and enrollment information, just write to: The Winona School of Professional Photography, P.O. Box 419, Winona Lake, Indiana 46590. □



Show off your shots on Kodak paper.

Kodak makes it easier to start making your own color prints direct from slides or negatives.

We've made it easier, more practical, more economical, and more fun to make your own big color prints direct from slides or negatives. The Kodak way.

By introducing trial-size packages of quality Kodak professional papers, and chemicals for one-quart mixtures.

Kodak Ektachrome RC paper, type 1993, and Kodak Ektaprint R-500 chemicals let you make color prints direct from slides, without internegatives, in

8x10, 11x14, or 16x20 sizes. Or make these same size prints from your color negatives using Kodak Ektacolor 37 RC paper and Kodak Ektaprint 3 chemicals.

We make it easy with detailed instructions, available at your photo dealer's, for both tube-type processors and tray processing. And even easier with our new Kodeword™ darkroom audio cassettes that talk you through color processing, step by step, second by second.

Look into this exciting new dimension of color photography.

Color printing products

Let your photo dealer help you "make color printing your bag!"



SELF- ASSIGNMENT

BEN HELPRIN

DEVELOPING TIMES



□ High quality negatives require precise control of exposure and development. Last month, with the goal of producing high quality negatives in mind, I discussed a method of determining precise exposure control data. This month I'll discuss a method of determining precise developing time data.

The duration of the developing time is extremely important because it affects the proportional relationship between the tonalities of the negative and the tonalities of the original subject matter. When the densities of the negative are accurately proportional to the brightness values of the original subject, then the negative is considered to be technically "correct." However, an accurate and precisely determined developing time is needed to produce such a negative. (Interpretive purposes may require deviations from this representative "correctness," but you must know how to produce a technically correct negative before you can knowledgeably control deviations from it.)

Unfortunately, it is impossible to determine an exact, universally applicable developing time that will produce a technically correct negative because the exact developing time is dependent upon the individual photographer's equipment and personal working methods. It is for this reason that the developing times published by manufacturers must be regarded only as suggested starting points and not as precisely absolute values. Truly accurate developing times must be determined empirically by the individual photographer. The testing procedure involves three basic steps:

1. A roll of test film is given an exposure that has been carefully calculated to produce a certain density upon the film. This negative density corresponds to a specific tonal value.

2. The particular developer being tested is used to develop different sections of the film for different developing time periods. These different developing times will produce different densities on the test film. The longer the developing time, the greater the density.

3. The density of each test film section is measured—either directly or by comparative analysis—to determine

which developing time produced the correct negative density for the specified tonal value.

Specific instructions relating to this test procedure are as follows:



This excellent photograph exhibits a delicate tonal range that has been achieved through precise control of the negative's exposure and development. © John Griffith

1. Load your camera with the black-and-white film you wish to test.

2. Wind off one or two "blank" exposures in which no light reaches the film. This should be carried out in a dark room or with a tight-fitting lens cap placed over the lens to insure that these first frames remain unexposed. The blank negatives will be used later to determine the film's base density.

3. Carefully and evenly illuminate a "target" exposure area. This area should measure approximately 6x9 feet and be white or gray in color. A blank, untextured wall or a large piece of seamless background paper is excellent for this purpose. It is imperative that this target area be evenly lit. Use a light meter—not your eye—to check the evenness of the illumination.

4. Set your light meter at the film's empirical ASA speed (as determined in last month's "Self-Assignment").

5. Take a reflected light reading of the illuminated area (if you use an incident light meter, it must be used in the reflected mode) and set your camera to give exactly one stop more exposure than that indicated by your meter. Then using this increased exposure setting, make repeated exposures of the illuminated area until the entire roll of film has been exposed. Stand close enough to the illuminated area to insure that it fills the entire film frame.

Note: a reflected light meter reading

of a blank surface will normally indicate an exposure that will pictorially depict the blank surface as a midgray of 18-percent reflectance value.

Increasing the indicated exposure by one full stop will create a negative density that pictorially depicts the blank surface as a lighter gray of 36-percent reflectance value. This particular light-gray tonality is known as a Zone VI value in Ansel Adams' Zone System.

There are two important advantages in using a Zone VI tonal value for the test exposure. The first advantage is that the previously mentioned Zone System prescribes a precise value for a Zone VI negative density. Therefore, we now have a definite and "correct" comparative value to measure the density of the test film.

The second advantage lies in the fact that the developing time that produces the correct negative density for a Zone VI exposure will produce equally correct proportional negative densities for all the other zone values. Thus the correct developing time for the Zone VI test exposure is also the correct developing time for an exposure that includes a full range of tonal values. This empirically correct developing time—coupled with correct exposure—will consistently produce technically excellent negatives whose densities maintain a proportionately accurate relationship to the brightness values seen in the original subject.

6. Develop the exposed film in the specific developer you want to test. The film should be developed in five different sections for five different time periods, as follows:

Section 1: Manufacturer's suggested developing time less 20 percent.

Section 2: Manufacturer's suggested developing time less 10 percent.

Section 3: Manufacturer's suggested developing time.

Section 4: Manufacturer's suggested developing time plus 10 percent.

Section 5: Manufacturer's suggested developing time plus 20 percent.

Note: the actual duration of these developing time periods is dependent upon the temperature of the developer. To avoid later confusion label each section of film to identify the comparative developing time.

7. Determine which section of film has been developed to the correct density for the Zone VI exposure originally placed upon the film.

I'll cover this density determination process and some other important aspects of film developing in next month's column. □



A fine 35mm SLR doesn't
have to be expensive.



Minolta became America's best-selling 35mm SLR by giving you more camera for your money than anyone else. And now you can get more Minolta for your money than ever before with a choice of six SR-T models and a wide range of features to fill your creative needs. All at prices that will probably never be so low again.

Whichever SR-T you choose, you get that comfortable Minolta feeling, almost as if the camera were an extension of your hands and your mind. Focusing and exposure information is in the viewfinder, so you never lose sight of your subject. And you're free to catch the one photograph that could never be taken again.

Patented "CLC" through-the-lens metering automatically compensates to protect you from under-exposure in high-contrast situations. Meter-coupled Minolta lenses stay at maximum aperture, so the finder is always at full brightness until the instant of exposure.

To make it easy to change your field of view, all Minolta SR-T cameras accept any lens in the superbly crafted Rokkor-X or the economical Celtic systems. They range from 7.5mm fisheye to 1600mm super-telephoto, including a variety of zoom and macro lenses, and interchange in seconds without f/stop realignment or special indexing.

Before you spend more than you have to for the camera you want, look into a Minolta SR-T. Your photo dealer will be pleased to give you a demonstration. Or write for literature to Minolta Corporation, 101 Williams Drive, Ramsey, New Jersey 07446. In Canada: Anglophoto Ltd., P.Q.

Minolta SR-T

More camera for your money.

FOCUS

MARKENE KRUSE-SMITH

THE SUPER 8 BOOK



□ The super 8 movement has expanded so rapidly in the last several years, it's become difficult for even the most avid photographic periodical readers and moviemakers to keep pace

with new developments. No sooner is some new camera, projector or editing viewer introduced by its manufacturer or distributor than legions of filmmakers and potential filmmakers stream into camera stores to acquire the item. Some movie buffs are inspired to duplicate techniques they've seen or read about with equipment they already own. Thus new techniques are continually discovered, tested and incorporated into home movies and independent films.

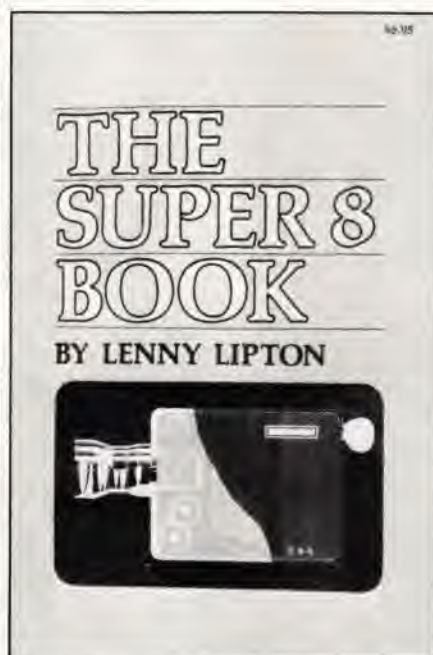
But neither trial-and-error filming and editing nor periodic spending sprees at the neighborhood camera store provides the most satisfactory answers to the most often asked questions: What moviemaking systems are available? What methods of super 8 filming/editing are best suited for my purposes? How can I best learn about the possibilities of filmmaking?

What's needed is a good manual, a volume that can be used both as a text and a handy reference source—one that's well-designed, with plenty of illustrations and a great deal of concisely written information. A comprehensive index is essential, and perhaps chapter headings could be printed vertically along the right edge of the margins, dictionarylike, so it would be possible to flip through the pages to locate a specific section in a hurry. The book should be a lightweight paperback but with a sturdy binding. Most of all, the ideal super 8 book would be up to date and easy to read—no esoteric technojumble. It so happens that just such an extraordinary book is currently available. Long-awaited and recently published is:

THE SUPER 8 BOOK

by Lenny Lipton
Straight Arrow Books
625 Third Street
San Francisco, California 94107
\$6.95

Lenny Lipton, author of the much re-



spected *Independent Filmmaking* (see "Focus," October, 1974), has done it again. *The Super 8 Book* includes all the very latest information on the super 8 format, and it's written simply and directly. Edited by Chet Roaman and designed and illustrated by Christopher Swan, *The Super 8 Book* is an exceedingly well-planned volume. At the risk of overdoing the superlatives, I've just got to say it's the best book I've seen on the subject.

The contents begin with an interesting section about the super 8 format. Lipton provides a bit of film history, with a review of film basics, and he accords special attention to the unique characteristics of super 8. He discusses film speeds, how film is made and compares single 8 and super 8 film cartridges, packaging and prices.

The chapter about cameras explores design and function, with sections describing the features, operation and prices for each of 15 popular super 8 cameras, along with suggestions for best putting the various features to good use for your own filmic purposes. The chapter on sound explains the various methods for making super 8 sound movies, with sections devoted to microphones, shooting sync sound and reports on specific systems for producing sound films. One portion of the book covers film processing and sound strip-

ing; another details the steps involved in editing, with instructions for doing both sound and silent setups and guidelines for cutting and piecing together footage filmed with double and single system sound. (See "Home Movies: How to Shoot and Edit Single System Sound," this issue, page 54, for an informative discussion of single system techniques.)

The chapter on prints tells everything you need to know about why it might be necessary to make a workprint, blowup, duplicate or reduction print of your film, how to determine whether to use an optical or magnetic sound track, when to dupe onto videotape and how prints are made.

Finally, the chapter on projection covers projector design, sprocketless drive, servo drive, automatic threading, projector cartridges, lamps, noise, specific projectors (including Eumig, Bolex, Kodak and Elmo models), system quality, dust prevention, screens and optical vs. electronic projection methods.

Lenny Lipton is excited about super 8 filmmaking, and his enthusiasm comes across in the carefully researched, simply written text and comments. Among the author's acknowledgments is a special one "to Jean Cocteau, who anticipated super 8 when he said, 'Film will only become an art when its materials are as inexpensive as pencil and paper.'"

It's always going to take some time and a little bit of money to make a good film. But at least the technology to do so is becoming more generally available than ever before. And Lenny Lipton is in the vanguard of teachers, writers and filmmakers dedicated to demystifying the complexities of this challenging art form and to distributing information to an increasingly sound/image oriented public.

A couple of years ago I thought I'd found the most lucidly written handbook possible about film production techniques, equipment and practical methods for shooting, recording and editing in Lenny Lipton's *Independent Filmmaking*. "What better text could a progressive filmmaker ask for?" I marveled. To champions of the super 8 format I can now wholeheartedly recommend Lenny Lipton's *The Super 8 Book*. It's the single most authoritative source yet. □

You have the talent... We can give you the secrets!



How many times have you tried to fix a car or make a speech, and ended up feeling foolish and frustrated?

Well, it's similar with photography. You have the interest and the talent, but something is holding you back. It's knowledge. It's really tough for an amateur to obtain the knowledge and confidence on his own to be a photographer.

That's where we come in.

The School of Modern Photography can provide the training you need, right in your own home, to give you the knowledge and confidence of a professional photographer.

Over the experience of 35 years and over 50,000 students before you, SMP has perfected a sure-fire method of teaching that really works. It's easy. It's fun. You learn in your spare time. You go at your own speed. You don't have to leave your job. And, you don't have to travel to a single classroom; it's entirely by mail . . .

The secret of such success is that you learn by doing. After each lesson, you have a photo assignment that is designed to show you how well you have understood the subject. Friendly and sympathetic SMP master photographer/licensed instructors comment on your photos. You may receive compliments, or you may receive your photos back, overlaid to point out your individual weaknesses, along with an explanation to you alone of what is off target and a point-by-point instruction of how to overcome your problem.

You'll find that your SMP instructors will take the time to help you individually to be sure that you understand. They are concerned for your success.

You will begin to see your own photography improve right before your eyes. You'll begin to shoot subjects you avoided before. Your eye becomes more sure. Your touch becomes secure. The compliments of

your friends increase. You're no longer fearful of results. Pretty soon you are accepting assignments for fun or for payment.

You are tasting the rewards of a professional photographer.

Then, when that day arrives — when you hang your SMP diploma on the wall, you have the life-long value of knowing how to take pictures that sell. You'll always have the security of a wonderful hobby, the ability to make part-time earnings, or as so many thousands of SMP graduates before you, the knowledge and confidence to seek a full time job in photography, or become your own boss in a professional studio of your very own.

Get the full facts. Send for our big FREE book. There's no obligation. No salesman will ever call. Use the card — or coupon below.

FREE! MAIL COUPON TODAY!

SMP colorful 36 page book, "A Successful Career For You in Photography" answers all your questions — tells you where, when and how to capture the opportunities awaiting you in photography, pinpoints the highlights of the home study course. YOUR FREE COPY IS YOURS FOR THE ASKING. NO OBLIGATION. NO SALESMAN WILL CALL. DON'T DELAY — WRITE TODAY!!



The School of Modern Photography

Dept. 4-452-046

Little Falls, New Jersey 07424

Please send me full information regarding SMP's famous Home Study Course. And send me your big free super-illustrated book that tells about SMP's methods and teaching systems, and gives me the picture of the opportunities I can find in photography. No salesman will call.

Name

Address

City

State Zip

THE SCHOOL OF MODERN PHOTOGRAPHY

Dept. 4-452-046 Little Falls, New Jersey 07424

super duper

That's what owners call the Illumitran 3 because it's the quick, simple and economical way to duplicate your color slides.

But there's much more to the story.

The special value of the Illumitran is in how it helps improve your original transparencies; how it makes it easy to color correct, enhance or crop and enlarge the almost perfect slide.

Exposure is controlled simply by a direct reading meter coupled to the flash stage. You get correct setting whether compensating for originals of varying density or for color correcting filters. You can copy originals up to 4 x 5; make or copy filmstrips; crop; make blowups and reductions; internegatives and Polaroid® prints. In fact, we can't tell you all its uses. Illumitran owners constantly tell us of new applications.

A built-in automatically controlled electronic flash gives you a 5:1; repeatable continuously variable output in each of two intensity ranges: one for conventional daylight color films, the second, for the new color duping emulsions. Color temperature is a constant 5600°K.

Ask your dealer or write for a brochure and learn why experts consider the Illumitran THE transparency duplicator.



BOWENS ILLUMITRAN 3
the versatile super duper

BOGEN PHOTO CORP.
P.O. Box 448, 100 So. Van Brunt St.
Englewood, N.J. 07631

CAMERA ON CAMPUS

ROBERT ROUTH

TEACH THE ZONE SYSTEM IN HIGH SCHOOL?



□ It all depends on what you mean by "System." When you penetrate the intimidating forest of words often used to describe this pregnant idea ushered in by Adams/Archer, it all boils down to an exposure, development and printing technique that is predictable. However, each of these points has been expanded into countless written and lectured edicts, often obscuring the sensibility of relating some of the basic principles of sensitometry to the exposure, development and printing processes. This brings us back to the original question: should the Zone System be taught in high school?

If we mean applying that fundamental tenet of "exposing for the shadows and developing for the highlights" in black-and-white photography in order to save time, effort and materials, the answer is emphatically "yes!" Toward this end, some aspects of the Zone System have great value in teaching photography in high school.

The Zone System has great value in high school photography classes, for example, in the testing for an effective film speed for a particular film, meter, camera, film-developing combination. This testing not only gives a visual idea of where shadow detail should start (first clear sign of an image) but as a bonus helps to clarify any student misunderstanding as to how the shutter speeds and f-stops function to vary light, not to mention catching up with a defective camera or meter.

The test consists of exposing a roll of film by metering a surface, such as a gray card, and making some half-stop exposures around the necessary four-stop decrease from the indicated meter reading to arrive in the vicinity of Zone I. This procedure is used to determine the effective film speed for your meter, film, camera and film-developer combination by picking a threshold density of .1 if a densitometer is available, and if not, by selecting the first frame that's just perceptibly denser than the blank frame.

Once this effective film speed testing chore is completed, the student can settle down to several serious steps toward achieving technically good prints. A practical starting point could be the understanding of what is meant by Zone III (areas of darkest detail in the original subject matter) and some field examples to strengthen the concept.

Now it's time to turn to the darkroom for two more tests—the proper development time for your film and the standard enlarging time for exposing paper. The first of these two tests will achieve a development time (by trial-and-error departures from manufacturer's recommended development time if necessary) which will enable you to match a Zone V (middle gray) exposure to its printed equivalent on a sheet of normal grade paper when it is exposed for the standard enlargement time. To determine the standard enlargement time the .1 density frame (found by the effective film speed test) is projected in the same shared light beam as an adjacent blank frame onto a generally used size of paper.

A test strip is made to determine the first perceptible change in density (from the deepest black of the paper) between these two frames. This exposure becomes the standard enlarging time for this paper size. Combine this information with a paper such as Ilford Ilfo-brom or Kodak Kodabrom RC (where paper speeds are equalized), and you have a sequence of events that should, with one well-chosen exposure, developed to a predetermined time, produce an acceptable print on the first try.

The sooner a student gets over the hurdle of a basic mastery of equipment, materials and processes and gets down to the exciting business of translating what he sees into photographic images, the greater will be his sense of accomplishment, and the more educational will be the experience.

To get back to teaching the Zone System in high school, some inspired Zone System devotees might ask, "What about the other zones (i.e., basing the exposure on other than the limiting Zone III) when planning an exposure?" Good idea to consider *after* the student masters a zone that he can readily visualize, such as Zone III—a rational point from which to grow. Another question, "What about plus and minus development to accommodate scenes of varying contrast?" On this point, I am somewhat cautious. There are undoubtedly some high school teachers—and I would like to hear from them—who are now teaching the Zone System and who possibly do include plus and minus development in their course of study. I am not convinced it is worth the extra hassle, and I doubt that it would be within the interest and ability level of

most high school students. Graded or Polycontrast papers will solve the problem of contrast for the beginner.

WHAT ABOUT PREVISUALIZATION?

Perhaps the most serious question of all stems from the idea of previsualization. Any serious writing on the Zone System includes this idea as an integral part of the total concept. This is understandable, as Adams, Minor White and others have sought to bring the principles of sensitometry to the working photographer so that the exposing, developing and printing sequence is a predictable process for the purpose—and this is most important—of freeing the photographer from the trial-and-error uncertainties that cloud the picture-making process with undue emphasis on technique.

Ideally, this freedom enables him to assess the subject in terms of how he wishes to reproduce it (previsualization), with appropriate exposure (verified by some basic tests), to be able to set into motion a series of technical events which will culminate in a print in which the tonal values will appear as he visualized them. In this sense, the technique has been useful, not as an end, but as a means to an end.

It might be argued that any simplification of or omission from the total process as generally described will tend to dissipate this advantage. So what? Simply because a system has evolved into a sophisticated approach that suits the needs of a special group of photographers is no justification for not extracting from it those elements which might be pertinent to a beginning photo class. The idea here is to offer students an approach which will give them acceptable prints as quickly as possible.

For further reading I recommend *The Zone VI Workshop*, by Fred Picker (Zone VI Studios, RFD 1, Box 188, Putney, Vermont 05346) and his *The Fine Print* (Amphoto, Garden City, New York), which as a supplement provides excellent visual examples of Picker's system. *The Zone Systemizer*, by John J. Dowell III and Richard D. Zakia (Morgan & Morgan, Inc., Dobbs Ferry, New York) is also a helpful reference source. Arnold Gassan's *Handbook for Contemporary Photography* (Handbook Publishing, Box 491, Athens, Ohio 45701), used in many universities, is an excellent source for teaching a basic approach to the Zone System. *Understanding Photography*, by Carl Shipman (H.P. Books, P.O. Box 5367, Tucson, Arizona 45701), is a technical paperback written with a light touch which I heartily recommend for clarifying the basic pinions on which the photographic process functions. □



The Bigmouth developing tank. One of the new Vivitar darkroom accessories.

How many times have you poured chemicals into a developing tank and ended up with more on your pants than in the tank? Why? Because the wretched mouth of the tank was too small to catch the amount of liquid you were pouring. SOLUTION: Developing tanks with big mouths. Naturally, we call them BIGMOUTH.

You have a batch of rolls and now you're going to develop them all at once. But when you start loading the second roll on the wet plastic reel things get sticky. SOLUTION: Design a plastic reel with little nubs to break the surface tension so you really can load it wet.

Then you put a print in the developing tray. Or is that the fixer? Of course, they get mixed up because they look alike in the darkroom. SOLUTION: Color code the trays so you can tell the

difference even under a safelight. Also color code the print tongs so they contrast with the trays.

We took this same sort of approach with mercury thermometers, lowly film clips, squeegees, stirring rods, even papersafes.

We've tried to eliminate some of the dumb things that can happen in darkrooms because of accessories that don't do the job.

Have we succeeded? See for yourself. Look for the jolly bright boxes on the Vivitar darkroom accessory display at your photo dealer.

Marketed in the U.S.A. by
Ponder & Best, Inc. Corporate Offices:
1630 Stewart Street, Santa Monica, CA
90406. In Canada: Precision Cameras
of Canada, Ltd., Montreal.



A new line of darkroom accessories by
Vivitar



TECHNAL'S A-I Dryer IS FULL OF HOT AIR!

And, experts agree, that's the best way to dry resin coated prints. They will lie flatter faster than when dried at room temperature.

The new Technal A-I Dryer provides a gentle stream of filtered, heated air (with variable temperature control) to dry a full load of 8 8x10's or 4 11x14's in as little as 4 minutes. And, laid out on a cool surface, they flatten themselves as if by magic.

DRY FILM TOO with accessory racks which hold a total of 6 35mm or 120 stainless steel reels and 2 rods for sheet film negs up to 4x5.

NEW! TECHNAL A-I Print Dryer

At your dealer, or write

BOGEN PHOTO CORP.

100 So. Van Brunt St., P.O. 448
Englewood, N.J. 07631



Celebrate the Bicentennial in Your Own

INSTANT ANTIQUE PHOTO BUSINESS



Prof. Bloodgood Reveals His Secrets for:

- ★ Advertising, locating, equipping
- ★ Costuming, posing, processing
- ★ Sepia toning Polaroid Prints
- ★ 11 x 14 prints in 2 minutes!

JUST \$19.95

PLUS 2.50 UPS & HANDLING

- Illustrated Handbook and New Supplement • Sample Photos
- Studio Layouts • Studio Poster • Sample Mounts
- 2 Costume Catalogs • Reproducible Ad Flyer
- List of Suppliers

Send check or money order today. You can open for business in 2 weeks!

Prof. Bloodgood's — Dept. SP, 3837 Mariana, S.B., Ca. 93105
(Calif. Residents add 6% sales tax)

Everything you need to know about CB is in this new book by Radio Shack!

Reg. ~~1.25~~

25¢

WITH THIS AD *



Contents Include

- Types of radios • Antenna facts
- Methods of installing equipment
- How it works • Distance • Rules
- FCC offices • CB slang • Glossary
- "10" Signals • More!

Special Introductory Offer!

Our just-published 116-page CB pocket-size book is *available now* at Radio Shack stores at a "give-away" price of just 25¢, prior to its listing in our catalog at \$1.25. If you're into CB 2-way radio or getting in (as who isn't!) you'll want this book to avoid costly errors.

Edited by the folks who started our famous Realistic® CB line in 1959, it's authoritative and very easy to read. 9 chapters. Over 100 pictures. Written for laymen. *None sent by mail.* *Get your copy for 25¢ by bringing this ad to any nearby participating Radio Shack store or dealer TODAY!

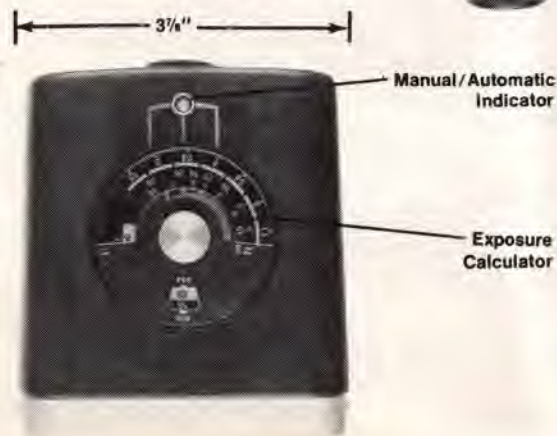
Radio Shack®

A TANDY CORPORATION COMPANY

**LEADING THE WAY IN
CB SINCE 1959**

Photographic's SPEC SHEET

TOSHIBA ES-10S



TYPE: Portable electronic flash with automatic electric eye

SIZE: 8 15/16" high x 3 1/4" wide x 4 1/4" deep (227mm x 100mm x 105.7mm)

WEIGHT: 28.3 oz. (802g)

BASIC PACKAGE: Electronic flash unit, wide-angle attachment, mounting bracket, sensor with hot-shoe mount, connecting synchro cord with sensor and battery cartridge

PRICE: \$139.95

DISTRIBUTOR: Elmo Mfg. Corp., 32-10 57th Street, Woodside, New York 11377

FEATURES

Guide Number: 55 with ASA 25 film, 60 with ASA 32 film, 90 with ASA 64 film, 125 with ASA 125 film, 150 with ASA 200 film, 210 with ASA 400 film.

Power Source: Four 1.5-volt AA size alkaline pen-light batteries, Mallory MN1500 or Eveready E91.

Recharging Time: Not applicable, as batteries must be replaced when exhausted.

Flash Duration: 1/1000 on manual, 1/1000 to 1/30,000 on automatic.

Recycle Time: From 0.5 to 9 seconds on automatic, 9 seconds on manual.

Number of Flashes: 100 to 3000 flashes on automatic, 100 to 130 on manual.

Flash Tube: Xenon-filled with approximate life expectancy of 20,000 flashes.

Angle of Coverage: 50° vertical, 60° horizontal; with wide-angle adapter, 60° vertical, 75° horizontal.

Color Temperature: Balanced for daylight, approximately 5500°K.

Ready-Light: Located on back of unit, signals when unit is ready to fire.

Accessories: All are included in basic package.

Synchronization: Synchro socket located on bottom of flash head for connection to PC outlet or to hot shoe by appropriate cord provided with unit, requires X, no delay, shutter synchronization.

Hot-Shoe Mount: By special cord for automatic use only; unit mounts by bracket provided to tripod socket of camera.

Open-Flash Button: Located on back of unit just under the ready-light.

Calculator: ASA range 25-400.

COMMENTS

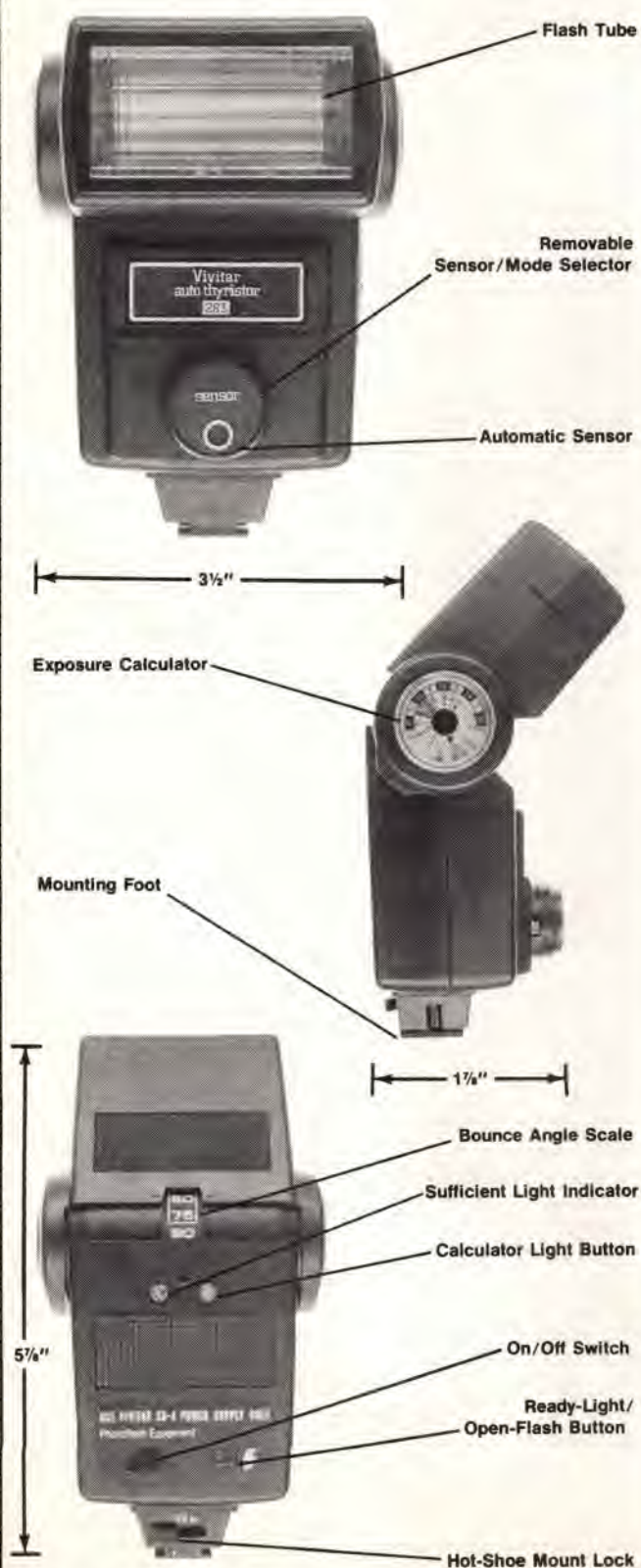
The traditionally shaped design of the Toshiba ES-10S belies its very contemporary functions. It uses the latest thyristorized electronic circuitry to control flash duration automatically to match the amount of light needed for the subject. This system also conserves the amount of energy used. Only the amount of light needed to illuminate the subject according to the aperture chosen is used, thereby lengthening battery life. Three aperture output automatic ranges, plus manual, are provided.

Three synchronization cords are provided. One incorporates a sensor in a housing that attaches and synchs through the hot shoe on the camera, which allows automatic operation for either direct or bounce-light operation. The other two cords are for connection to a PC outlet on the camera, one for automatic operation and one for manual.

The unit is extremely well made. All controls and attachments are sturdy, smooth operating and easy to use. The appearance and quality of the finish of the Toshiba ES-10S is superb.

Photographic's SPEC SHEET

VIVITAR 283



TYPE: Portable electronic flash with automatic electric eye

SIZE: 5 1/8" high x 3 1/2" wide x 1 1/4" deep (149mm x 89mm x 48mm)

WEIGHT: 14 oz. (400g)

BASIC PACKAGE: Electronic flash unit, detachable shutter cord, removable sensor, sensor holder, shutter cord socket, remote sensor cord and alkaline battery holder

PRICE: \$119.95

DISTRIBUTOR: Ponder & Best, Inc., 1630 Stewart Street, Santa Monica, California 90406

FEATURES

Guide Number: 60 with ASA 25 film, 70 with ASA 32 film, 96 with ASA 64 film, 135 with ASA 125 film, 170 with ASA 200 film, 240 with ASA 400 film.

Power Source: Four 1.5-volt size AA alkaline batteries, Mallory MN1500 or Eveready E91. Optional Vivitar NC-3 nickel-cadmium battery pack. Optional Vivitar SB-4 AC cord adapter to use with household electric current. Optional Vivitar HVP-1 high-voltage battery pack for 510-volt battery for extended sequential use.

Recharging Time: Applicable to Vivitar NC-3 only with charger; recharges nickel-cadmium batteries in 15 minutes.

Flash Duration: 1/1000 on manual, 1/1000 to 1/30,000 on automatic.

Recycle Time: 0.5 to 9 seconds on automatic, 9 seconds on manual.

Number of Flashes: With alkaline batteries 75 to 800 on automatic, 75 on manual.

Flash Tube: Xenon-filled.

Angle of Coverage: 45° vertical, 60° horizontal. A selection of four optional variable angle flash lenses for wide-angle use of lenses as short as 24mm (35mm camera) as well as for moderate telephotos to those longer than 135mm (35mm camera).

Color Temperature: Balanced for daylight, 5500°K.

Ready-Light: Incorporated in open-flash button on back of unit, signals when unit is charged and ready.

Accessories: Optional accessories include: remote sensor and holder with 1.2 meter cord, soft bounce reflector holder with Kodak gray card, quick-release flash bracket, high voltage battery pack, NC-3 nickel-cadmium battery pack and "Charge 15" nickel-cadmium recharger, flash lens adapter, variable angle flash lenses and a six-filter kit.

Synchronization: By means of shutter cord, hot shoe or through sensor holder.

Hot-Shoe Mount: By means of nonremovable mounting foot on bottom of unit with locking device.

Open-Flash Button: Incorporated with ready-light.

Calculator: ASA range 25-800.

COMMENTS

The basic package Vivitar 283 is an extremely easy-to-use, efficient and versatile electronic flash unit. The lighted calculator dial, LED sufficient light indicator, bounce light compensator and four-mode (f-stop) automatic setting ranges are some of the features that make the Vivitar 283 an exceptional choice. When you add to that the extensive range of accessories that have been made available, the 283 has to be considered in a class by itself. Almost any photographer interested in any kind of specialized picture taking can custom design a Vivitar 283 to suit his purpose.

110 PHOTOGRAPHY

KALTON C. LAHUE

CONQUER CAMERA MOVEMENT FOR SHARPER 110 PICTURES



□ People tend to judge a picture by how sharp it appears to be. Although sharpness is both a physical and a psychological phenomenon and thus relative depending upon the viewer, your primary

concern should be to achieve the physical aspect—a technically sharp photograph. While the problem of sharpness involves a variety of factors—the camera, lens, shutter, focus, film, negative development, enlarger and paper surface—camera movement has proven to be the greatest cause of fuzzy 110 pictures thus far.

Many larger format cameras allow you to choose the shutter speed (or at least indicate the speed being used), but sophisticated 110 cameras equipped with an electric eye and electronic shutter do not let you select, or even let you know, which speed the camera will use. The most they indicate is that the shutter has slowed to a speed where you should not attempt a picture unless 1. more light is provided in the form of a cube or EF, or 2. the camera is supported in some way to prevent its movement. This is one aspect of camera movement in 110 photography; another and less well-understood factor is the amount of movement recorded on the negative even when the shutter is operating at its top speed.

Suppose you're on the ski slope, with the wind blowing and the nippy cold occasionally causing a shiver or two—would you stop to consider the possibility of camera movement? Probably not—as the sun is shining brightly, and you realize that the camera's shutter is operating at its upper limit, you feel a certain sense of security. Yet you'd be surprised at just how much camera movement can and does take place during that brief 1/250 second while the shutter is open—and if you are using one of the less sophisticated 110s with a top speed of 1/50 or 1/100 second, the amount is far greater. In either case, it may not be enough to spoil the picture completely, but it's usually sufficient to soften the image considerably.

How you hold the camera has a great

deal to do with the amount of camera movement you must cope with; whenever you raise your arms above the body's center line, fatigue begins to set in. Some people can hold their arms in such positions far longer than others, but all are eventually subject to this type of fatigue. Add an anxiety factor, such as waiting for just the right moment to trip the shutter, and you aggravate the situation, just as you do when applying downward pressure on the



Here's the ideal camera support—the Steadi-Pod with chest pad and tilt-top head. The cable release is optional but certainly can't hurt.

shutter button without tripping it.

Many users think that extending their arms horizontally when holding the small camera to their eye will make it easier to snap off a steady shot. While this position may appear and feel more natural at first, pulling those elbows down against the chest actually helps you to brace the camera against vertical movement, and at the same time, pressing it against your forehead will help minimize horizontal movement.

Learn the feel of your shutter button—just how hard you must press and how much free play or travel exists before the shutter is actually released. Once you have your subject framed in the viewfinder, start to squeeze the shutter button; check your composition and continue squeezing until you've taken the picture. One tendency that's hard to break is the movement of the camera as soon as the shutter click is heard—many users immediately withdraw it from their eye. Hold the camera

in position for a moment or two after the shutter click is heard; this will prevent camera movement and a possible blurry picture.

But suppose you want to take advantage of the low-light capability of the electronic shutter—can you prevent camera movement without resorting to a tripod? Bracing the camera against a nearby support such as a table, tree, wall, etc., is often unsatisfactory because it limits the manner in which you can compose your subject matter. Several devices exist that can be used in place of a tripod: the one that comes to mind first for most 110 users is the Kodak Compact Camera Stand, but due to its odd shape/size and the limited degree of adjustment possible, this camera support has little to recommend it to the serious user.

A far better tripod substitute is one of the miniature tabletop tripods or the so-called grip pod, a camera grip equipped with three small legs to turn it into a tabletop tripod. This combination unit is most ideal for shooting indoor candids, as these small camera supports can be used either to brace a moderately short exposure or with the legs in place will actually function as a tripod. And if you select carefully from the various models available, you can even pick up one that will adjust itself to become a modified shoulder brace for outdoor available light photography. Their small size is another plus factor, as carrying one with you is not much more trouble than carrying a number of cubes for flash pictures.

Probably the most versatile camera support for 110 users, the Steadi-Pod (available from P&L Industries, Box 35364, Minneapolis, Minnesota 55435), has proven ideal for many of my needs. A two-piece metal tube with a tripod screw to fit the camera on one end and an O-ring with a halter strap on the other, this uncomplicated camera support can be quickly taken apart and stored in its accompanying carrying case, which in turn slips into a pocket with as much ease as the 110 camera. Used in conjunction with the chest pad and a tilt-top tripod head also offered by the manufacturer, you can conquer almost any situation. Changing the length of the halter strap is the only adjustment provided or required.

While I've by no means exhausted the topic of conquering camera movement, I'd recommend that you examine your recent pictures carefully, and if you have the vague feeling that they could be sharper, consider reexamining your camera-holding techniques. Chances are good that you'll find them at fault, but with a little conscientious effort you should be able to easily correct the problem. □



Now you can make your own brilliant Cibachrome® prints directly from your slides.

Until now, color printing has been an involved, time-consuming proposition — characterized by long hours of trial and error, critical temperature and time controls and, all-too-often, disappointing results.

But Ilford has changed all that with the Cibachrome color print system. Now you can capture all of the detail and richness of your slides in spectacular, fade-resistant color prints. Prints so crisp, saturated and beautiful that they are comparable in quality to the best professionally produced prints.

And because the Cibachrome

system is a direct-positive system, a whole new world of dramatic creative possibilities is opened to you. You can experiment with special color filtering, slide composites and sandwich printing — and see the results on your enlarger easel *before* making a print.

The Cibachrome process is surprisingly practical too. Its 3-step chemistry operates at normal room temperature (75°F with a $\pm 3^\circ\text{F}$ temperature latitude). All of the 12-minute processing time, including a final wash, is in normal room light when the Cibachrome processing drum is used.

And because the chemistry has been so uniquely formulated, the Cibachrome process has phenomenal latitude in exposure, filtration and processing time and temperature.

At last, color printing has come of age. And the Cibachrome color print system is the reason!

When Ilford brought you the best in Black & White, you should have known that the best in color was just around the corner.

ILFORD

The Cibachrome® color print system:

Unlike all other photographic systems, the Cibachrome system starts with pure, brilliant, light-fast dyes already present in the emulsion layers of the print material. After exposure and during processing, these dyes are selectively bleached away. The process completely bypasses the color problems encountered in conventional color processes. Dye impurities never form, so colors are crisp and true. And because fade-resistant azo dyes are used, this color fidelity lasts for years.

Your Ilford dealer has everything you need to make Cibachrome prints in your own darkroom. He can show you the results you can expect and will describe the Cibachrome process in detail.

Stop by the Cibachrome center in your dealer's darkroom department and see for yourself the brilliant new world of Cibachrome color.

Cibachrome chemistry kit—Process P-12—

A 3-step chemistry with a 12-minute cycle time including final wash that operates at normal room temperature (75°F with a $\pm 3^\circ\text{F}$ temperature latitude).

Cibachrome processing drum—

A versatile, easy-to-use drum for room-light processing with exceptional results.

Cibachrome color printing filters—

Nineteen filters to color correct your slides, or to use in achieving special creative effects.



Cibachrome color print manual

A complete guide to achieving spectacular color prints in your home—includes full exposure and color correction data for all makes of film.



Cibachrome color print material—Type A—

The remarkable new direct-positive print material that makes quality color printing from slides practical for the home darkroom.



WHERE THE ACTION IS

DAVID SUTTON

CONTINUED RESPONSE TO READERS' QUESTIONS



□ Along the lines of last month's column, I feel it appropriate to share a few more queries and answers with you. This way, certain important questions, coupled with the replies and explanations, will serve a broader purpose by being openly discussed here.

One particular question which aroused my interest concerned taking a picture of a sports figure during a game. The query posed me was: *Could a photograph of this nature be used for commercial purposes without the consent of the player?*

The answer is an emphatic *no!* By way of explanation I must add that *under no circumstances may a photograph of any individual, sports or otherwise, be used commercially for advertising, promotion, endorsement, publicity, etc., without the express permission of the subject, plus a signed release to that effect.*

Similar consent is also required when photographing the property and/or possessions of an individual. For example, a number of years ago a photographer took some photographs of an unusual tree situated on the front lawn of an equally unusual and attractive home—without the consent of the homeowner. I forget whether the photograph appeared in advertising or editorial form, but I do remember that the homeowner took umbrage at the invasion of his privacy and filed a lawsuit. The photographer lost the case and had to pay damages plus court costs. I mention this only to point out that if you were to photograph someone's rare kitten, show-winning dog, prize-winning rose, highly stylized and customized car, an antique gun collection or any possession whatsoever, and the photograph appeared in the form of a greeting card, calendar, billboard, poster or other form of advertising or promotion, you could be held liable if you did not obtain written consent in the form of a release form to use the photograph commercially.

This is a hard and fast rule, and let there be no question or doubt about it. If you don't adhere to this age-old rul-

ing, you leave yourself wide open to certain litigation and all sorts of legal hassles.

In the editorial field it is a different situation entirely, for *theoretically*, photographs may be used without consent of the subject if they are used editorially for news-gathering purposes. This is also an age-old ruling which has been in practice for a number of years and in essence has been interpreted to mean that photo releases are not required for



My daughter and friends obligingly performed for me during a frolic-filled splashy ride at Busch Gardens, California. I obtained releases from everyone—including my daughter. © David Sutton

photographs which are used solely for editorial purposes. However, rulings and their interpretations are generally subject to change, and the question of whether or not a release is required for editorial use has long been a topic for interesting if not heated controversy.

As a matter of fact, in the last 10 or more years the question surrounding the matter of *invasion of privacy* has become such a delicate situation that in many cases, securing a release is not only considered advisable but quite necessary as well. Also please note that I prefaced my comments concerning photo releases in relation to editorial use by underscoring the word *theoretically*. I did this because, like many a seasoned veteran, I have come to realize that photographers simply cannot use the "no release is required for editorial use" concept as a shield. It is much too broad a conception, and any beginner who takes it as gospel is looking for trouble.

To assume that a photo release is not required simply because a photograph is used editorially does not preclude a lawsuit being hurled at you if the subject feels he or she has been maligned, embarrassed, belittled, subjected to ridicule, etc. Any of the above forms of defamation (and many more I haven't mentioned) may well result in litigation against you—whether you have a release or not and whether one was required.

Does this sound unreal, a contradiction, a double standard? To a great extent it is correct, and it's all based on

the manner and context in which your photographs are used and the way the subjects react when they see themselves in print.

For this reason publications may become targets for lawsuits, many of which are of the nuisance variety and are quickly thrown out of court. Nonetheless, the legal proceedings are costly and time-consuming, and as a result, legal departments of many publications now request releases, not so much because they are required but rather as a form of insurance in the event any problems arise.

While a magazine may not specifically request a release at the time you submit your material, you can be almost certain they will expect you to provide them with one should the occasion warrant it. Model releases are responsibilities you cannot overlook, and you should and must be prepared to fulfill your obligations as the contributor.

As for photographing people in the public eye—politicians, celebrities, sports figures, etc.—they have always been considered fair game when photographed for editorial and news-gathering purposes, with no consent or releases being required. Loss of privacy is one of the prices they must pay for their fame, supposedly; yet they can also sue and sometimes do, although it is more an exception than a rule, since this action usually attracts more attention than it might be worth.

As for shooting minors, most states consider a minor to be less than 18 years of age; therefore, if your subject is below that age, you will require not only his or her release but that of a parent or guardian as well.

The foregoing is not intended to frighten you out of your wits but rather to make you aware of certain facts of life where releases and the advisability of having them are concerned. Admittedly, there will be times when it is totally impossible to obtain a release and not necessarily because your request for one is refused. Sports events or other newsworthy happenings are prime examples of difficult situations in which to get signed model releases. These photographic situations are among the safest to shoot without fear of being hauled into court. But in those instances where you're using a model or photographing someone engaged in their hobby, a release becomes necessary.

Should anything I've said here deter you from shooting people, places or things? Not at all, providing you exercise good taste and judgment, show an interest in the feelings of your subject and consider the consequences of offering for publication any photographs which are questionable and which might be challenged at a later date. □

The Honeywell offer: \$100 off.



Save \$100 on a Pentax K series camera and the accessory lenses you want.

The new K cameras from Pentax are here. And for a limited time — to help introduce them — we're announcing a special rebate program that can get you as much as \$100 cash back!

Here are the details.

All you have to do is buy a Pentax K2, KX or KM camera body — between February 1 and May 31, 1976 — and you qualify for a \$20 rebate. Then you can buy as many as four Super-Multi-Coated Pentax accessory lenses — of your choice — to go along with it, and we'll send you a \$20 rebate on each of these for a total of up to \$100 cash back. What a way to build a camera system . . . and save!

Make your best deal!

This rebate program doesn't require that you pay top-dollar suggested retail prices, either. Instead, pick your favorite dealer. Make the best deal you can on your camera body and lenses . . . then sit back and wait for your rebate check from Honeywell!

Cameras that understand you.

The minute you get your hands on one of our new Pentax cameras, you'll understand why we call them the cameras that understand you. These are cameras that have been "human engineered." They have a new kind of bayonet-mount that locks lenses in place in less





than one-quarter of a turn, engineered so you can even change them in the dark. All three camera bodies have new beveled edges for more comfortable handling; an improved self-timer (with interrupt function); and a more convenient light meter activation system. One of them, the Pentax K2, is the world's smallest 35mm SLR electronic camera. And our remarkable KX has a viewfinder that tells you everything you need to know, even your f/stop setting, as well as a new pentaprism that delivers 10% brighter viewing than previous Pentax cameras.

This offer good only in U.S.A. For more information about the exciting "K" series of Pentax cameras and the Honeywell \$100 offer send in the coupon.

Look for this display.

Look for this special display at your nearest fine photo store. It tells you that this is a participating Honeywell photo dealer. This display includes our rebate coupons.

See your Honeywell Photo dealer soon. Then buy a new Pentax K camera, and accessory lenses . . . to qualify for your rebates!



Honeywell

PHOTOGRAPHIC PRODUCTS DIVISION



Yes, I'd like to know more about the Cameras that understand me and

The Honeywell \$100 offer

Please print

Name

Address

City/State/Zip

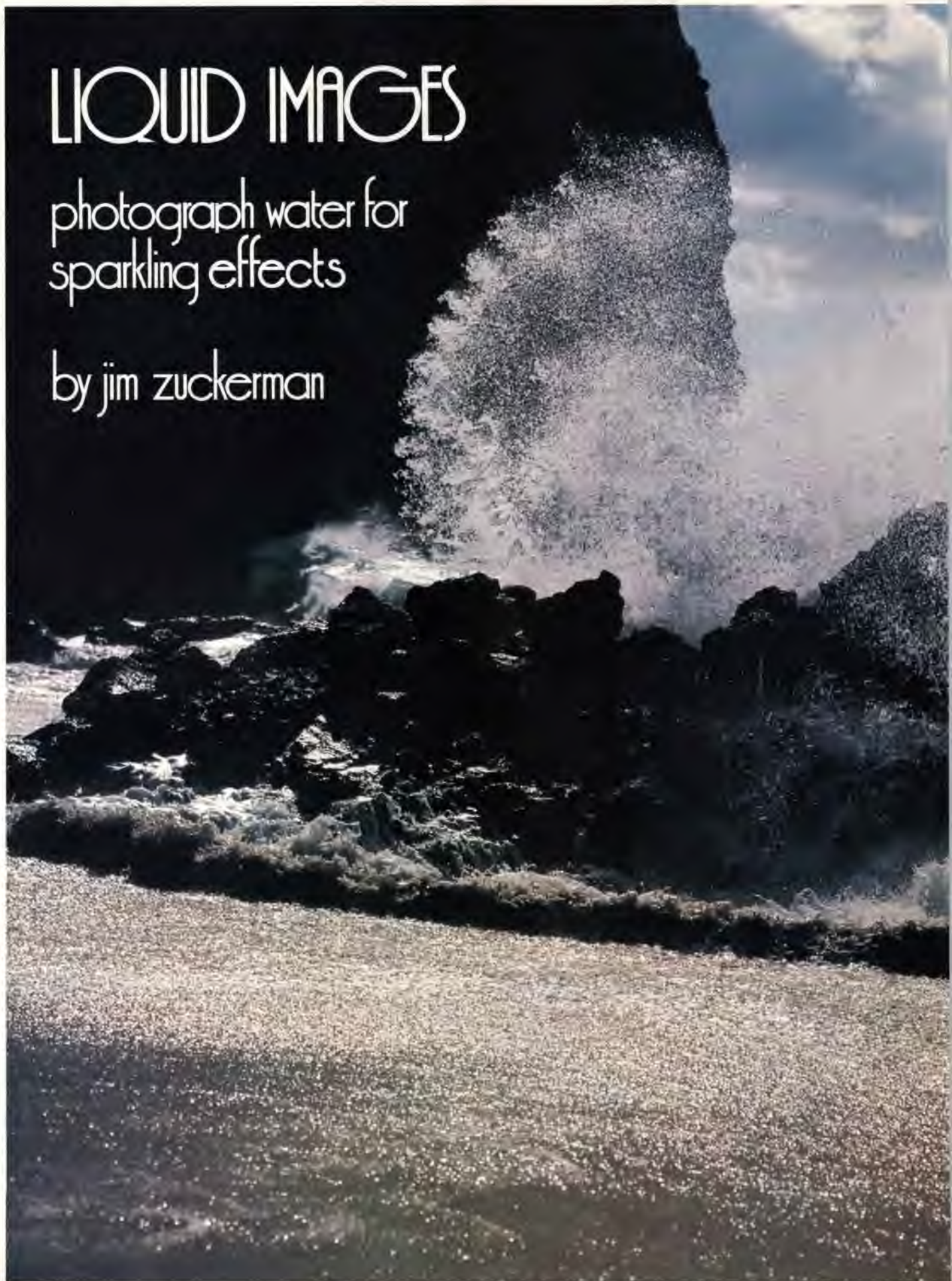
Mail to:

Honeywell Photographic, Dept. 204-733
P.O. Box 22007, Denver, CO 80222

LIQUID IMAGES

photograph water for
sparkling effects

by jim zuckerman





2



3





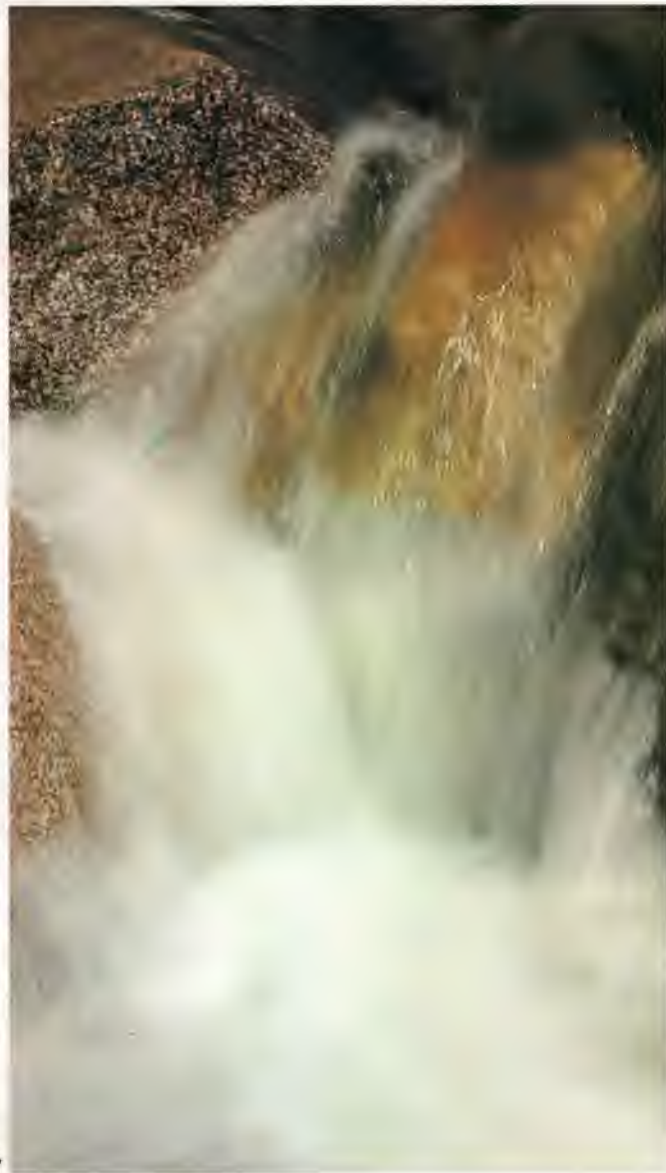
4



5



6



7

Most photographers take pictures of water at least once in their photographic experience. Whether it be a wave crashing against a rock, a child playing in a swimming pool or a dewdrop, amateurs and professionals alike must deal with unwanted reflections, exposure problems, contrast and other related considerations that go into making good water photographs. There are basically five different types of photographic situations that involve water. They are: 1. the ocean, 2. waterfalls and fast moving rivers, 3. lakes and ponds, 4. small amounts of water used for abstracting images, such as puddles and water drops and 5. underwater photography. The first four situations will be considered at length in this article. Underwater photography is an entire subject in itself and beyond the scope of the present discussion.

PROBLEMS AND SOLUTIONS

The first and most difficult factor to deal with when shooting water is exposure. The reason exposure can be such a problem is that water, unlike many other subjects, is both highly reflective and very transparent. Both these qualities intensify and distort light and can easily give a false meter reading. Both handheld light meters and through-the-lens meters are designed to accept light from a specific angle only. This angle may be quite wide, such as 50°, or it may be extremely narrow, like the Minolta Auto Spot 1° meter which analyzes light from only 1°. In either case, the late afternoon sun's reflection on the ocean or a lake produces an image of such high contrast that the meter sees only blinding highlights and black shadows. The shadows are not black, of course, but compared to the intense reflection, they appear black both to our eyes (because our pupils have "closed down" to compensate for the bright

light) and to the light meter. Since a body of water is constantly in motion, the light reflected on its surface is constantly in motion. This fact adds to the difficulty of finding a usable reading because the meter needle fluctuates. For example, if you exposed the picture to obtain the natural color of the ocean by taking a reading of the ocean anywhere except directly into the reflection, the reflective highlights would simply be so overexposed that the entire photograph would be washed out. If you exposed for the reflection by pointing your meter directly at the intense light, the rest of the surrounding water would appear black, and the resulting image would appear black-and-white because of the excessive contrast.

What are the solutions? Either accept the extreme contrast or don't shoot into reflections. Wait until midday when the sun is overhead, and the lighting is very flat. By placing the sun behind you, high contrast conditions will also be eliminated. When you do decide to tackle those blinding reflections, though, your light meter can be used and will provide reasonable results. For extra drama and impact try underexposing a stop or two beyond what the meter suggests.

One other problem area when exposing water shots involves the white foam of crashing waves. The explosion of white is so bright in comparison to the surrounding beach and ocean that the meter is again forced to take a reading from extremes in light intensity. The automatic meter will instantly signal the lens to close down the aperture to compensate for the brilliant white of the foam, while the rest of the picture area will go dark. The blue of the ocean will become black, and a dark rock will lose all its detail, etc. To avoid this simply take a light reading of the ocean before the wave crashes and stick to that reading. An automatic meter *must* be taken off automatic and used on manual.

Fast moving rivers give the photographer the same difficulties. White water is just as contrasty as a crashing wave. The way to handle this situation, though, is to expose for the deep green of the river (or perhaps underexpose ½ stop for more saturated color) and shoot. For those of you who are thinking of shooting the rapids with a camera and a kayak or river raft, *don't*. There's no way to safeguard your camera gear and your life and still get good pictures. I know this from personal experience.

LENS SELECTION

When photographing water, just as in any other area of photography, your lens selection is very important. Your lens choice for water photography can actually affect exposure and contrast. For example, a 24mm lens used to shoot the setting sun over the ocean will not only record the sun and its reflections but will also include a large area of water on either side of the reflections. If a 400mm telephoto were used, the only part of the scene included in the photo might be sun with its brilliant reflection. The wide-angle shot would be much less contrasty than the telephoto version, and a greater range of tones would be seen.

It's impossible to say which lens to use for any particular situation, because the choice depends on what the photographer wants to portray in his photograph. Standing in one position and using two different lenses will produce two completely different pictures. A telephoto can isolate a wave crest, a ripple or the opposite bank of a river. It can abstract the sun's reflection, the spray pattern of a waterfall or the salty foam of an ocean wave. A wide-angle reveals a panorama. It can also distort perspective and elongate a body of water, increase depth and make the horizon appear curved. A normal lens, of course, offers approximately the same perspective as our eyes perceive. A macro lens is invaluable for capturing drops of water and the distorted images that reside within. A macro is also great for shooting morning dew on blades of grass or backlit leaves. A zoom lens is extremely handy because it combines many of these capabilities in one compact unit.

Remember, then, that the lens you choose should be determined by the results you're seeking. The only feature on a lens that might inhibit its use is its maximum aperture. In many cases, a maximum aperture of f/2 is much more practical than f/5.6. And since, of course, aperture is interrelated with shutter speed, let's explore what happens when the shutter is open for different lengths of time.

EXPOSURE

One of the most dynamic shots of water movement can be seen and studied when each drop of water is absolutely motionless and frozen in midair. This is a unique pattern that will probably never be seen or even exist again. The only way to capture this phenomenon on film is to expose the film for such a brief instant that the water drops move a negligible distance

All color photos were taken with Pentax 6x7 camera and 105mm SMCT lens; film was Kodak Ektachrome-X, rated normally.

1. The fanlike spray of a wave was captured with an exposure of 1/1000 at f/5.6.
2. A piece of ice floating on a pond was underexposed four f-stops, 1/500 at f/16, for this abstract image. The bright white dot in center is sun's reflection.
3. Serene image of melting snow was created by exposing for the snow, 1/250 at f/4.
4. Night view of Hong Kong harbor was exposed for 20 seconds at f/2.4.
5. A polarizing filter was used to deepen the blue ocean and sky in this Hawaiian beach scene; exposure was 1/125 at f/5.6.
6. The setting sun and its reflection were underexposed one stop, 1/500 at f/11, for this atmospheric shot.
7. The raging Kern River in California was photographed using a small f-stop and very slow shutter speed, ¼ at f/16, to create blurred water effect.



IS THIS THE ULTIMATE CAMERA?

Introducing the Mamiya M645.

The M645 is so lightweight and compact, it handles like a 35mm camera. But delivers medium-format (6 x 4.5cm) results with 120 or 220 roll film.

But don't take our word for it. Read what the experts have to say. Then find out for yourself.

"...Mamiya's M645 has a great deal to like about it including a projected price which...is surprisingly moderate..."

Modern Photography

"It's about time a camera like this came along. Now I can get 35mm practicality coupled with 2 1/4" quality."

Dennis Manarchy, Commercial Photographer

"As soon as I picked up the M645, I knew I had to own one."

Pamela Haller, Commercial Photographer

"If there are several cameras available from which to choose, one does not hesitate to pick the M645."

Petersen's Photographic Magazine

Service on all Mamiya products handled through Bell & Howell/Mamiya Company dealers.



Actual sizes: M645 format vs. 35mm.

BHMC

BELL & HOWELL / MAMIYA COMPANY

©1976 BELL & HOWELL/MAMIYA COMPANY. All Rights Reserved.

LIQUID IMAGES

and, as a result, are rendered sharp in every detail. There are two ways to accomplish this: 1. use a very fast shutter speed or 2. an electronic flash with a flash duration of *at least* 1/1000th of a second (some units have a flash duration of 1/100,000th of a second). The latter method is impractical for most outdoor, daylight situations. Using a fast shutter speed, then, is the best and most available means to stop fast moving water and freeze its image on film.

Choice of shutter speed depends, of course, on the specific situation. As a rule, always use the fastest one possible—1/1000 on most cameras, 1/2000 on some of the newer ones. If lighting conditions, film speed and the maximum lens aperture you're using dictate a slower speed, such as 1/500 or 1/250, then you're more limited. But consider this: a racing car coming straight toward you, no matter how fast it is going, can be photographed using 1/125 with no blur. If that same car going the same speed crosses in front of you going from left to right, that same shutter speed would probably blur the car, unless you panned the camera (which would then blur the background).

The same is true for any moving subject, including water. A waterfall, a crashing wave seen from the side or a raging river moving past the view of the photographer all require a faster shutter speed to freeze motion than if the movement were toward you. So in some cases 1/125 can be used successfully. However, when shooting the same subject from a different perspective, perhaps only 1/1000 would adequately produce a sharp enough image. If you know what kind of conditions you will encounter, prepare for them by selecting a fast enough film, a lens with a large enough aperture and plan to shoot at a time of day that provides lighting best suited to your needs.

There are times, though, when water movement can best be interpreted photographically by a blurred image. A soft blur of a river while the surrounding foliage and rocks remain sharp is often very effective in suggesting movement. This effect is obviously achieved by using a very slow shutter speed. By allowing the film to receive a long exposure, anything moving within the picture will be blurred. All stationary ob-



ALL PHOTOS BY THE AUTHOR

The sparkling tip of Baja, California, was photographed from a sailboat with a Canon FTb, 50mm Canon lens and Ektachrome-X film, 1/250 at f/11; black-and-white knockdown from color film.

jects will remain sharp. When using long shutter speeds, a tripod is a must. Otherwise the entire photo would appear unsharp. Your film speed is also important. A slow film, in this instance, is much better. For example, if you're using Kodak High Speed Ektachrome Film on a bright sunny day, even with your lens closed down, the only way you can shoot at 1/2 second is to use a very dense neutral density filter.

Achieving the unusual quality of this technique is dependent on the contrast between the in-focus environment and the soft, blurred water. The amount of blur depends on the speed of the water, the lens used and the selection of shutter speed. A distant waterfall photographed through a wide-angle lens would probably require an exposure of at least one full second for the movement to show on the film. On the other hand, a telephoto used for shooting into the midst of a rapids could easily blur the water using 1/15. A gently flowing brook in a forest photographed with a normal lens might require a 1/2-second exposure to provide enough movement to blur successfully. Don't make the mistake of assuming any amount of blur will be pleasing. This isn't true. Too little movement will produce a blurred shot that looks like a mistake, instead of a planned, creative endeavor. Too much blur will make the water indistinguishable with no detail.

SPECIAL EFFECTS

Filters used when shooting water can be helpful in many instances. A polarizer, for example, can reduce or eliminate the reflection, depending on the angle the light is striking the water. It can also be used as a neutral density filter for reducing the amount of light that strikes the film. Polarizers don't

change the color of the original scene, but they can dramatically enrich the colors that are present. A skylight filter is often used simply to protect the lens from splashing water. Color filters can be used for special effects, such as double exposing sunlight on water with two different color filters. When shooting black-and-white, color filters will have little effect unless the water is definitely a strong color. Only then can relative contrast be altered. Mood can be changed by using certain types of fog filters or vignettes over the lens. My favorite method of softening mood and creating a hazy, surreal atmosphere is to spread Vaseline on a skylight filter (never on the lens). Leave a small portion in the center of the filter where no Vaseline is smeared, so the center portion of the image is recognizable. This is a common but very effective technique.

If your interests lie in abstract photography, water is a perfect medium. Extreme close-ups of water drops, day and nighttime reflections on water, food coloring dropped into a glass of water and bubbles are only a few of the areas that can be explored in great detail by the abstract enthusiast.

Photographing water can result in very fascinating and unique images. But some final words of caution: take proper care of your equipment. Protect the camera and lens by wrapping a clear plastic bag around them. When shooting near water, especially a fast moving river, a waterfall or the ocean, your camera can be easily damaged by water spray or mist. More horrifying, but all too common, is when a piece of equipment slips into the water and disappears forever. Remember, water severely damages photographic equipment and saltwater kills. *Always* wear the camera strap around your neck and never stop clutching the camera unless both of you are going under. If your camera falls into the water and you're *able* to retrieve it, have it serviced *immediately*. Certainly no more than 24 hours should elapse before it is opened and completely dried.

Like any photographic situation, shooting water requires both practice and patience before consistently pleasing images result. Every time a mistake is made, determine the cause and, next time you're out shooting, don't make the same error. You will discover, though, that new and different problems always arise. A great part of the enjoyment of shooting liquid images is meeting these challenges with creativity and ingenuity. □

the fine art of buying flash brackets

how to get a grip on things!

by kalton c. lahue



Anyone who says that photography today is easier than it's ever been just isn't much of a flash fiend. Despite the degree of sophistication shown by our space-age hardware designers, some problems like that of flash placement simply refuse to submit to solutions. From the time synchro flash was unleashed on the unsuspecting amateur in the '30s, he's been wondering *where* to put the darned thing. Until the flashbulb came along, flash photography was a pretty cut-and-dried affair—amateurs and pros alike mounted their camera on a tripod, opened the shutter and then ignited a pan of flash powder or strip of flash tape from any handy position.

ON-CAMERA FLASH

But the great appeal of canned light was its portability, and so manufacturers provided an immediate solution to its placement by bracketing the flashgun to the camera. The result was flat lighting and harsh shadows, but wherever the camera went, that good old portable sunlight could go with it. As one might suspect, innovative pros weren't satisfied with this, and some earned lasting fame by designing all kinds of unusual arrangements to retain portability, trying to be creative with light while getting around the problems of on-camera flash.

But while photographers fussed and fumed about flash brackets, camera manufacturers jumped in to provide their own alternative—they obligingly wired the lowly accessory shoe into the flash-sync circuit, giving us the now-infamous "hot" shoe. Hapless souls that we are, we accepted the resulting clip-on flash because it was convenient, despite the fact that in addition to flat lighting and unnatural shadows, we now had to contend with the "red-eye" syndrome (when the flash and camera lens are in the same plane, the light penetrates the eye's pupil, bounces around through the red blood vessels in the retina and reflects back to the film carrying a pink or reddish coloration).

Those wanting only a snapshot paid little attention to red-eye; more serious amateurs found it a highly obnoxious effect and continued to seek new ways to be more creative with their use of flash. The best solution to both red-eye and creative lighting is, of course, to get the flash away from the camera's lens, and to do this, whole new industries arose.

OFF-CAMERA FLASH

Extension flash came first, with long coiled cords used to separate flash

from camera and allow more creative lighting. Unfortunately, holding the flash in one hand and the camera in the other became a burden for all but the dedicated as the single-lens reflex grew in size and weight. Bounce flash (on and off camera) became a temporary rage, while everyone tried to calculate correct exposure, and then the pros went to multiple flash using slave units. But this last move proved both costly and cumbersome for the more casual among our ranks, who preferred not to overcomplicate the solution. And so garbed in modern dress, an old idea arose phoenixlike from its own ashes to offer the latest "ultimate" answer to the problems posed by on-camera flash—the flash bracket!

ON-CAMERA FLASH AGAIN?

Basically an L-shape or variation on the "J" theme, the new breed of flash bracket offered by accessory manufacturers is a multiple-function device serving primarily as a camera grip that also happens to connect the flash to the camera. In addition, it may also fold up for easier carrying, adjust or tilt in some manner, permit variable flash placement, allow the simultaneous use of more than one flash unit or replace the camera's shutter release with a trigger or cable release of its own.

Some even double as a pistol grip (Kalimar and Stitz), while others make an ideal club for self-defense (UPI and Suntar), and a couple permit the storage of extra film cartridges in the grip (Accura and Kalt). But the truly ingenious bracket comes as a kit (Stitz) with a large variety of interchangeable parts that permit the user to decide exactly which function he needs at the time and then construct it accordingly. To date, I've only stumbled across one omission on the part of bracket designers—no one makes a bracket wired to accept a hot shoe—only flash; if your unit doesn't have a PC cord, you're sunk.

PSST—WANNA BUY A BRACKET?

You may find yourself in need of more than one bracket, depending upon your camera(s) and the functions you plan to assign to a bracket. Starting with the simple straight model with an accessory shoe to hold the flash on one end and an attachment screw on the other, you can go to the traditional L-shape, which usually has a grip attached. These can be straight, slanted or twisted L-shapes and may have finger grips molded in. From here the variations lean toward the exotic, as we'll see.

Unfortunately, many brackets serve

no useful purpose after they are purchased. Once the novelty of their use wears off, it becomes too much trouble to carry some around; others are slow and awkward to attach and remove from the camera; some are hardly sturdy enough for use with a 110, and a few are so versatile that they're practically useless.

But don't resign yourself *this* early in the story—like any other photo accessory, you can find a bracket that's just what you need, and one with which you'll be highly satisfied. You just have to wade through dozens of designs and variations to find it. So how should you start? Having spent months collecting, examining and field testing close to 70 different accessory flash brackets (and I'm sure I didn't get them *all*), I'm going to give you some hints on how to sort the wheat from the chaff.



2. Flash brackets come in all sizes, shapes and styles. My personal setup is a Vesta dual flash bracket to hold twin Kako 818s, while retaining the shoe-mounted flash in the form of the tiny Minolta Electroflash P for that extra punch of light down the center. Nope, I don't get red-eye, either.

2. The HMC Bracket I allows 360° flash angle rotation and 180° flash head swing. Self-locking nuts hold the adjusting screws at selected tension, while the bracket pad serrations run parallel to prevent camera twist. Bracket II is designed for use with "potato masher" flashes, and HMC offers a quick-release mounting clip/clamp that accepts all such units. This one has a lot of versatility in a simple design and is available in standard and professional models.

3. A "J" variation, the System J bracket permits rotating, turning and height adjustment of the flash. The flash post is removable, and the bracket can be fitted to an umbrella for portable shooting. The camera can be positioned at any place along the length of the bracket. Lightweight and highly portable, this bracket design also accepts an extension post as an accessory.

The key to the right bracket is twofold: decide what its prime function will be and shop until you find it. Bet you've heard that advice before, but I'll also bet that you seldom follow it. You come across a few in a camera shop, and after thinking over the logic of the thing for a moment or two, you decide

that one might possibly come in handy, and so you buy. I've even seen photographers buy brackets simply because they were struck by one or more unique but useless features. Chances are that regardless of how good your intentions are when you buy, before long it'll gradually settle to the bottom of your gadget bag for a long rest.

Beyond the pointers provided in this limited space, the most sage advice I can pass along is—don't buy—not until you've shopped as much of the field as possible. While many brackets may look identical in design and function, more often than not, there are one or two minor changes between them that can spell the difference between satisfaction or apathy with your purchase. And whatever else you do, don't delegate the purchase of your bracket to someone else—do it yourself!



3. While experimenting with my dual-flash technique, I went through several different bracket designs without much success. True, each one did the required job of holding the flash unit in its own fashion, but none were really efficient or even handy. Stumbling on the Vesta dual flash bracket quite by accident, I knew that it was the *one* when I saw it and have used it constantly for several years now with complete satisfaction. You just have to tailor your bracket purchase to your individual needs. Now, on to the finer points of bracket buying.

CONSTRUCTION

Assuming you know why you're buying a flash bracket and that you're ready to go shopping for it, you should be aware that bracket construction is every bit as important as its design—something the impulse shopper seldom considers. Manufactured in Japan by a handful of companies, the majority of flash brackets are sold in this country

flash brackets

under the brand name of their U.S. distributor, although a few do appear carrying Japanese trade names, such as Stitz, Hami or Etsumi. A handful come from Germany under the Rowi name, while a few of the more specialized designs are made right in the United States. Virtually all use a combination of metal and plastic, and here's where the quality comparison begins.

Metal castings are used for most designs, but a few rely on stamped steel. Stampings hold down total bracket weight to permit more unusual and/or versatile designs, but such brackets have limitations as to the amount of camera/flash weight they will handle. If the possibilities offered by one of these designs catches your fancy, be sure to fit it to your particular equipment combination before parting with your money.

Your flash unit should fit snugly into the bracket shoe; strange as it may seem, there's apparently no agreement on the exact height of the shoe's lips. As a result, some flash units fit too snugly in a given bracket shoe, making their removal difficult, while others will actually fall out of the same shoe. At least one, the Rowi Slant Bracket, uses a plastic insert in an oversize shoe. This provides sufficient "give" to act as an adjustment shim and is also reversible, allowing use of the bracket on either side of the camera. Another design by PRO uses a spring-loaded locking clamp to secure the flash to the shoe.

How the shoe is mounted to the bracket is important, especially if you're using a heavy flash unit (eight ounces or more with batteries). Some are mounted with two to five small screws, while others are riveted in place. While the screws do have a tendency to loosen with repeated flash installation and removal (a jeweler's screwdriver set is a recommended accessory for heavy-duty users); if the rivet snaps, that's it. Pay the same close scrutiny to the hinge on a folding bracket, and consider whether it's sturdy enough to hold up under the amount of weight and kind of use you intend to give it.

Many brackets are fitted with a plastic hand strap on one side of the grip; some of these are adjustable and some are not. Testing four identical appearing brackets of the same design but sold under different brand names, I found that two such straps were far



too loose to fit my hand; the third was adequate, but the fourth was a nice, snug fit. If you find an ideal bracket, but its nonadjustable strap doesn't fit your hand properly, look for the same design under a different trade name, and you'll probably score.

The camera mounting portion of the L-bracket is generally seven inches long, and the way in which it is slotted for mounting to your camera should be considered in conjunction with the placement of the camera's tripod socket. A few designs use a single five-inch slot, but a two-slot design is more common, with one measuring two inches and the other 2½ inches. The longer slot may be found either near the grip or near the bracket end, depending upon the particular bracket in question. With some cameras, this can mean the difference between a comfortable fit and one that's satisfactory.

The upper face of each bracket mounting arm is covered with a strip of rubberized or plastic material. In most cases this has a "tread" design that prevents marring the camera baseplate and acts as an adhesion surface between camera and bracket, making it easier to achieve a nonslip mounting. While the variety and thickness of "tread" designs are almost as great as the number of bracket variations, the suitability of one bracket over another may be more directly related to the



length of the bracket attachment screw—the next area of concern.

These screws vary in length from one bracket design to another, and it's entirely possible that they may be too long or too short for your particular camera's tripod socket. I can think of nothing less useful than a bracket which lets the camera slide around because the screw won't tighten it securely; although having to shim a too-long screw shaft with washers runs a close second in frustration. Some bracket screws come fitted with thin plastic washers for this very purpose.

Don't worry whether the attachment screw is threaded to fit a tripod (some are, some aren't); this is generally a less-than-satisfactory arrangement anyway, as you simply have too much un-



3

1. Variations on a theme by adding a trigger and cable release—the Kalimar is shown attached to the camera; the PRO Super Deluxe has an adjustable accessory shoe; the Prinz fits 35mm cameras, and the Gold Crest is shown folded. Some also permit use of the cable release from the rear of the grip.

2. This Kalimar bracket is built around a pistol grip. A second camera could be used instead of the Kako flash shown, and the bracket can be reversed to permit right-hand use of the grip. A revolving button on the side of the grip locks the trigger against accidental release.

3. The PRO Bounce Flash Bracket has a spring-loaded clamp at the base of its accessory shoe. This permits easy entry and secure locking of any flash foot.

balanced weight to perch everything atop a tripod in this way without encountering camera wobble and other problems. Look instead for a separate tripod thread in the bracket near the base of the grip. This will allow tripod use if necessary, without fear that the whole mess will end up in a heap on the ground.

And speaking of balance, this is another important consideration, but one more related to design than construction. With the bracket and flash mounted to the camera, you should be able to place the whole thing on a table without having the camera pitch forward. If not, you're going to have to use caution whenever you want to set the camera down, and even so this will invariably result in your equipment taking unnecessary jolts on occasion.

Now suppose that your taste runs to one of the more exotic brackets which permit release of the camera shutter

36 to 1* Reflectasol® Strobasol®

"A Studio...in a Case"



* "36 to 1" means a lightweight, portable Studio in a Case! The formula is:

- (1) Strobasol® VX8000 @ 7 lbs.
- (1) Strobasol® X8000 @ 7 lbs.
- (3) Reflecta-Stands™ @ 9 lbs.
- (1) Soff Box™ @ 1½ lbs.
- (1) 42" Silver Reflectasol® Hex @ 1 lb.
- (1) 42" Square Reflectasol® @ 1 lb.
- (1) Studio Case @ 9 lbs. = 36 to 1!

The 36 to 1 Studio Features the Strobasol® Strobe System

- Self contained and only 7 lbs.
- Patented center mounting of Reflectasol® and Soff Box™.
- Plug-in flash tube (Avg. 75,000 flashes).
- 250 watt quartz modeling lamp with hi-lo control.
- Two second recycle time.
- F-11, ASA 100 at 10' with Reflectasol® shown.
- Strobasol® X8000 full and half intensity control.
- Strobasol® VX8000 1½ f-stop continuous variable control.
- One year guarantee (except flash tube / modeling lamp).

Also shown above is the Larson Portable Background which is available in gray, brown, blue or green, and the new Reflecta-Stand™ available with or without casters. The Reflecta-Stand™ extends from 30" to 90". Not shown is the Larson Vignette Shade™, Leon Vignette Kit™, Reflectasol® Barn Doors, and a variety of other cases.

The lightweight and compact Strobasols® and Reflectasols® mean complete portability for the photographer on the go!



® Larson Enterprises, Inc.

"The Bounce Light People"

P.O. Box 8705

Fountain Valley, California 92708

Telephone (714) 557-5220



AVAILABLE FROM:

ALABAMA

Bush & Millmaki Services, Huntsville

ARIZONA

The Guild Camera Shop, Phoenix

CALIFORNIA

Cal's Camera, Costa Mesa
Bob Gamble's Photo Supply, Hollywood
Adolph Gasser, Inc., San Francisco
McCurry Companies, Sacramento
Nelson's Photo Supply, San Diego

COLORADO

J. A. Ossen Co., Denver

FLORIDA

Mileo Photo Supply, Inc., Coral Gables

ILLINOIS

Standard Photo Supply, Chicago

INDIANA

The H. Lieber Co., Indianapolis
Schmitt Photo Service, Inc.,
Evansville

KANSAS & OKLAHOMA

Lawrence Photo Supply, Wichita, KS

MASSACHUSETTS

Zell Supply Co., Belmont

MINNESOTA

Olson Graphic Products, Inc., St. Paul

NORTH CAROLINA

Camera World, Charlotte

PENNSYLVANIA

Kadet Photo Supply, Pittsburgh

TEXAS

Camera Shop, Fort Worth
Skylark Camera, Pasadena
Southwest Photo Supplies,
San Antonio

UTAH

Wasatch Photographic, Salt Lake City

WASHINGTON, D.C.

Penn Camera Exchange, Inc.

CANADA

Henry's, Toronto
Photographic Supply Ltd., Vancouver
Simon's Camera, Inc., Montreal

ANTHONY PRUDENTE STARTED FROM SCRATCH (AND MADE SCRATCH).

Says photographer Anthony Prudente of Levittown, N.Y., "I've easily progressed 5 or 6 years within just one year and I started from scratch. Your course (Basic Lighting) helped make me more successful." And from old pro Jim Robbins of Johnston, R.I., "My sales took off."

Beginner or pro, you too can significantly increase your income fast through Photography Learning Systems' unique method. All you do is look at full-color slides, listen to cassettes — and learn lighting, posing, wedding candids, everything! It's quick, it's easy — and it works! Take it from Jay Stock of Martins Ferry, O., "It's the greatest educational breakthrough I've seen in all my years as a photographer." For FREE 16 page catalog, scratch off a note today.



Write: Dept. 545
Photography Learning Systems
196 Harrison Ave., Garfield, N.J. 07026
Better Photography thru Total Learning

PhotoGraphic / April 1976 51

breakthrough.

Now West German professional lenses priced the incredible Calumet way.

When you make the world's most popular view camera, you learn a lot about view camera optics. We took what we learned to one of West Germany's most respected optics manufacturers. There, the strict design specifications of Calumet were teamed with tradition-rich West German precision craftsmanship to create the new Calumet Caltar® II lenses. They incorporate six element formulas of the highest quality rare earth glass lenses mounted in precision Copal shutters in 65mm, 90mm, 135mm, 150mm, 210mm, 240mm, 300mm, and 360mm focal lengths.

These exceptional view camera lenses offer you the creative excellence you've been searching for, without budget problems.

Yet, because we have teamed the finest West German optical craftsmanship with Calumet's experience and our direct-from-the-factory prices, this superior view camera lens series is priced from less than \$200.

For a descriptive brochure on the dramatic Calumet Caltar® II breakthrough in professional optics, simply write to:

Calumet
scientific, inc.

1590 Touhy Avenue
Elk Grove Village, Illinois 60007

312/439-9330

New York—3502 Empire State Bldg., 10001
Los Angeles—434 North La Brea, 90036



flash brackets

from the grip. These use a cable release and generally take one of two forms: 1. a special cable release screws into the grip, and a separate trigger is squeezed to effect an exposure, or 2. a standard cable release fits through the grip, and shutter release is effected by depressing the release in the usual manner. In either case, check the cable release itself. You'll find that such brackets come equipped with cloth, metal or metal/vinyl-covered releases of varying lengths, some with adjustable or locking tips. Their quality runs the gamut from sturdy to flimsy.

In addition to making certain that the release furnished will fit your camera and trip the shutter without damage to either the release tip or cable socket, query the dealer about the availability of an extra release in case you should lose or damage yours. If he passes the buck, contact the distributor and quiz him about it; at the price asked for such brackets, it's not too much to expect that replacement releases can be made available. For this reason, it's pretty difficult to justify buying any bracket whose manufacturer/distributor cannot or will not supply replacements for the weakest "link" in his product's design.

MULTIPURPOSE BRACKETS

What about those very expensive multiple-function brackets you've seen advertised—do they do the job, and are they worth the money? In the case of two that I came across, the answer is yes to both questions, provided you're actually buying them as a tool and not just as a tinkerer's delight. Manufactured in Japan by UN, the PRO Perfect Holder Multi-Angle bracket (also offered by Soligor as its PVAB Reversible Pistol Grip) is just the ticket for those who want to use two cameras at the same time.

Both camera mounting shoe and flash head are of the quick-release design, providing probably the easiest mounting to any bracket that I've seen yet. The smoothly operating, front-mounted grip trigger can trip two integral cable releases, allowing simultaneous release of both camera shutters. When using a single camera and flash, the flash head can be adjusted for 360° rotation, while the camera mounting bracket adjusts in like fashion. The two combine to provide virtually any swing-and-tilt movement necessary to position the camera and flash as de-



1. The three major variations in bracket slotting are shown here. Note the threaded tripod socket near the base of the Gold Crest grip (center); this permits secure mounting of the camera/flash on a tripod without wobble or possible stress to inexpensive panheads.

2. Be sure to check the bracket attachment screw in your camera's tripod socket—screw shaft length and amount of thread varies with different brackets as does the depth of different cameras' tripod sockets.

3. The Stitz Convertible Set lets you create your own bracket design from the 10 components accompanying the basic pistol grip; 27 different configurations are detailed in the instruction leaflet.

sired. A heavy-duty contoured grip strap is fully adjustable and gives a feeling of complete confidence—lacking in many of the lighter and less sturdy designs. No doubt about it, this is one flash bracket of professional caliber, and so is the price.

A somewhat different concept, the Stitz Convertible Set is an 11-piece build-it-yourself bracket based around a dual-socket pistol grip. What Stitz has done is to package a handful of the basic bracket components with a few exotics, such as a two-section elevating rod which provides a 9½-inch extension for flash or camera. Quality of construction is equivalent to most of the general-purpose flash brackets on the market, but describing the many functions of this set is best left to the instruction leaflet, which details 27 different possible combinations. If you know what you want to do with it, the Stitz set will let you whip it up in a hurry; if not, you can always experiment, but like the PRO bracket, this



4. A professional-caliber, heavy-duty, multiple-function bracket, the PRO Multi-Angle by U.N. allows the use of two cameras; a second cable release can be fitted if desired. This one's expensive but versatile.

versatility is not inexpensive.

AMERICAN DESIGNS

Two less complicated but equally intriguing designs are the HMC Bracket I and II and the System J Bracket, both variations on the "J" configuration. Manufactured of tempered aluminum for rigid strength, the HMC is available in standard (without handgrip) or professional (with walnut grip) models; Bracket I accepts all shoe-mounted electronic flash units, while Bracket II is designed to accept the professional "potato masher" style, using a special quick-release clamp that works with any unit you care to name. The swinging flash head and rotating flash angle combine to give the HMC far more versatility than is apparent at first sight,

and the considerable human engineering which resulted in the design gives a feeling of balance between camera and flash that's lacking in many comparably priced brackets.

While the System J bracket's appearance is even more unusual, it was designed to perform certain tasks, which it does very well. A large adjusting nut allows the sturdy bracket handle and accessory shoe to be raised or lowered along its five-inch length and/or rotated 360°, permitting precise flash placement. The camera can be mounted at any point along the bracket's slot for vertical, horizontal or even angular placement. Readers addicted to umbrella shooting will find this one ideal, as it incorporates a provision for umbrella mounting.

WHAT'S AHEAD?

Unfortunately, the bracket is not the ultimate answer to the question of what to do with the flash, but after 40 years of progress, it seems to be the best we've come up with so far. We've tried on-camera, off-camera and even in-camera flash, and still the market for brackets continues to grow. Until something better comes along, we live with brackets, but in the meantime, putting a bit of thought and foresight into their selection and purchase can make them one of the most useful items in your gadget bag, or as in my case, a necessary accessory I wouldn't be without. □

FLASH BRACKET DISTRIBUTORS

Readers who live in the larger metropolitan areas should not have too much difficulty in ascertaining exactly what's available in the way of flash bracket designs meeting their specific needs. While no individual camera stores can possibly carry all the variations, you should be able to get a good idea by shopping several different stores. Check with the shop's salesman to see if his inventory is low, and if so, ask him to show you the various designs as pictured in the distributor's catalogs. Those who do not have access to a number of large camera stores in their area will find the following list of distributors useful; be sure to mention Petersen's PhotoGraphic Magazine if you write for literature.

Amcam International, 813 N. Franklin Street, Chicago, Illinois 60610 (Prinz).

Argraph Corporation, 111 Asia Place, Carlstadt, New Jersey 07072 (Samigon, System J, Etsumi).

Dot Line Corporation, 11916 Valerio Street, North Hollywood, California 91605.

Elmo Manufacturing Company, 32-10 57th Street, Woodside, New York 11377 (Hansa).

Hoos Manufacturing Company, 1035 Wesley Avenue, Evanston, Illinois 60202 (HMC).

Interstate Photo Supply, 168 Glen Cove Road, Carle Place, New York 11514 (Soligor).

Kalimar, Box 310, Chesterfield, Missouri 63017.

Kalt Corporation, 2036 Broadway, Santa Monica, California 90404 (Kalcot, Kaiser, Rowi).

Masel Supply Company, 128 32nd Street, Brooklyn, New York 11232 (Telesar).

Portertown Products, Inc., Route 1, Waterloo, Iowa 50701 (Portertown).

Ritz Camera Center, 11710 Baltimore Avenue, Beltsville, Maryland 20705 (PRO).

Uniphoto, Inc., 61-10 34th Avenue, Woodside, New York 11377 (Star-D, UPI).

THE FASTEST LOADER IN THE WEST!



The
WESTERN

35mm Bulk Film Loader has the ability to accept 100 ft. metal spools, a positive film brake, an accurate frame counter, a hinged access door and is made of unbreakable plastic.

The revolutionary WESTERN . . . the fastest in the West. For further information call or write:

Prefer Products



485 EASY STREET
SINN VALLEY, CALIFORNIA 93065
(213) 883-6552 • (805) 526-0909

OHIO INSTITUTE OF PHOTOGRAPHY

Five highly specialized programs, designed to train you in the skills and techniques that professional photography demands.

Approved for veterans • Approved by the State Board of School & College Registration (72-11-0344T) • Coeducational • Free Placement Service



Ohio Institute
of Photography
13 S. Jefferson St.
Dayton, Ohio 45402

Please send me descriptive brochure

Name _____

Street _____

City _____ State _____ Zip _____

HOME MOVIES:



1



2



3



4

HOW TO SHOOT AND EDIT SINGLE SYSTEM SOUND

BY ERNST WILDI



Sync sound filming can be done with either single system or double system equipment. In double system only the picture is recorded on the film. The sound is recorded on a separate tape using a portable battery-operated tape recorder. Double system

1. Live performances, such as stage plays, ballets and concerts provide excellent opportunities to film with single system synchronized sounds and pictures.

2. Record the voices and expressions of interesting and important people for the local club or community group who sponsors their visits.

3. With super 8, it's possible to capture the really important occasions in the lives of young performers and their proud parents.

4. While the sound of the roaring water at Niagara Falls goes well with the visual image for the first few moments of the film, it may be more effective to change to music if the sequence continues for a longer time.

5. The most exciting way to document vacation travels is on sound movie film.

6. Parades are among the most colorful subjects you can cover around town. Follow focusing is necessary as subjects move closer to camera.



HOME MOVIES

provides better sound quality and more complete editing possibilities but also involves more equipment, time and skill.

In single system, image and sound are simultaneously recorded on the film in the camera. The limitations in sound quality and editing are more than made up for by the simplicity of sound filming. Using single system involves simply loading a super 8 sound camera with a cassette of striped super 8 film to record both image and sound directly on the film. The film is then processed and projected on a super 8 sound projector.

With single system sound it's difficult to remove poor footage, shorten long takes or rearrange misplaced scenes. While filmed images can change instantly, rapid changes in the sound are not acceptable. Since sound must be continuous over an entire sequence, the camera must run continuously—it cannot be stopped and restarted for each new take unless there is no sound at the moment between takes. If you stop a silent movie camera in the middle of the performance, you lose continuity in the visual image. If you stop a sound camera in the middle of the music or the dialogue, you lose continuity in the sound. Loss of image continuity can usually be solved by inserting a cutaway. But in a single system sound film a cutaway would not solve the problem, since one would expect the sound to continue over the cutaway. In sound filming, therefore, it's important to employ camera techniques to produce a sound track that flows naturally from scene to scene to keep film editing to a minimum.

ZOOM, ZOOM, ZOOM

Since the introduction of zoom lenses, amateur filmmakers have been advised to zoom sparingly; they are encouraged to film scenes with separate shots from different distances and angles. This makes a more effective visual presentation, since it provides a constant change of image on the screen. In sound filming, however, the camera can be stopped only during a definite break in the sound (at the end of a speech, after the bowling ball hits the pins, at the end of a sentence, a *pause in typing*). If sound is continuous (street noises, bands playing, waterfalls, sound from TV sets), camera starts and stops are not possible, so the visual change to create image variety must be made by zooming.



In sound films a change from close-up to long shot or vice versa can be accomplished only by zooming, since a cut would interrupt the sound continuity.

Film the scene from a position where the wide-angle setting provides a good long shot, the telephoto setting an effective close-up. The longer the zoom range of the lens, the greater the difference between the long shot and the close-ups.

Although most super 8 sound cameras run relatively quietly, camera noise can be picked up by the microphone, especially during a silent break. To avoid such unwanted sounds, position the microphone as far away from the camera as possible. Cameras with variable-speed power zoom controls permit even zooms, some slow, others fast, in order to avoid zoom monotony.

FOLLOW FOCUS

During long sound takes you may

want to zoom in and out several times. Visual variety can be created by zooming into a different area or a different close-up each time. In a dance sequence, for instance, you may first zoom into the dancer's face, then zoom out again into a long shot, zoom into the dancer's feet, zoom out and so on.

In a sound take of a high school choral group the first zoom may end up in a close-up of the singers in the background, the next zoom on the conductor in the foreground, the third on the piano player behind the conductor. Since the subjects are at different distances all of them will never be in focus at once at the telephoto setting of the zoom lens. The distance

setting on the lens must be changed, and since the camera cannot be stopped, the refocusing must be done while filming. This technique is known as *follow focus*, and is constantly employed in documentary films and TV shows. Follow focus is completely acceptable today but must be done in a professional way. You can ruin the entire take if you turn the focusing ring in the wrong direction. Be certain you know whether a clockwise or counter-clockwise turn goes toward infinity. Think for a moment before you start turning, then watch carefully in the finder at the beginning of the turn to see whether sharpness improves or becomes worse.

Follow focus can only be done, of course, if you can see whether the lens is focused properly in the finder. Reflex focusing, not just reflex viewing, is therefore a very important feature of a sound camera.

While it is possible to change the distance setting on a handheld camera, it is hardly possible to zoom and follow focus simultaneously. With a tripod-mounted camera zooming and focusing can be done nearly simultaneously, provided you can eliminate the need to keep the release depressed.

There are various techniques for follow focusing: the release can be locked in the running position, which is possible on most cameras but may result in some wasted footage at the beginning of each take (until the release is locked or unlocked). Some cameras have a remote control outlet to which a remote cable can be connected. This is extremely useful, since starting and stopping can be done with either the hand that is used for focusing or the one used for zooming.

A remote-control switch on a microphone permits you to start and stop the camera with the hand that holds the mike, leaving the other hand free to zoom or focus (with camera on tripod). It allows filming without the operator having to be behind the camera, so the filmmaker can be in the picture himself, giving him/her the opportunity to comment on camera as is done in many documentary films and for TV newscasts. After the sequence is introduced, the filmmaker can walk out of the picture while the camera runs. If you introduce and end sound sequences in this fashion, it's easy to go from one sequence to another, without an alarming gap in continuity.

THE ACTION LIGHT

During silent filming, you can give oral directions while viewing through



When you make 'em bigger, make 'em better.

The bigger your enlargements, the more crucial the detail. That's a fact. And if you're looking for razor-sharp detail in your negatives and prints all the time, use Hansa all the time.

The Hansa S635 enlarger accepts 2-1/4" X 2-1/4" and 35mm negatives, has both a 50mm f3.5 lens, and a 75mm f3.5 lens, color filter drawer, and instantly converts to a copy stand with included accessories.

So when you want to make 'em bigger, make 'em better. With Hansa. See the full line at your dealer.

HANSA
Dist. by ELMO MFG.
32-10 57th Street, Woodside, N. Y.
21220 Erwin Street, Woodland Hills, California

HANSA
is the answer



Why it pays to invest in the world's most expensive 35mm SLR camera.

The new Leicaflex SL-2 offers mechanical and optical precision and many new features that make it well worth its price.

But even more than that, it is also a Leica, with the celebrated "Leica feel." And it has another Leica quality: the ability to hold or increase in value over time. (Early Leicas have increased to nearly three times their original value, some tenfold.)

The new SL-2 is a superb camera. And because it is a Leica it can be a great investment.

For details, call us at 201-767-1100 or write E. Leitz Inc., Rockleigh, N.J. 07647 Dept. C4.
In Canada, Wild Leitz, Ltd.
Willowdale (Toronto), Ont.

Leica

A great camera can be a great investment.

HOME MOVIES

the finder and operating the camera. With sound your voice will be picked up by the mike and must be cut out afterwards, or the directions must be given two to three seconds before the camera starts running. Cameras with a light at the front to indicate when the machine is on simplify the process, since the light tells performers when to start reading, singing, talking, moving.

PANNING

Silent filmmakers are advised to pan sparingly, letting the subject move instead of moving the camera. While this is good advice for silent filming, when using single system equipment some panning is necessary.

Long sound takes require camera movement into different parts of the scene—from one musician to another, from the performer to the audience, from one person in a discussion group to another, from the mother to the baby in the crib, etc. Frequently, the various subjects will be at different distances, requiring follow focus—as for zooms, especially when the panning is done at the telephoto setting.

FROM ONE SEQUENCE TO ANOTHER

All the techniques and approaches suggested so far have been made for the purpose of limiting scene changes and cutting film editing to a minimum. They do not necessarily solve the problem of connecting one sequence to another. A smooth transition requires careful consideration of the photographic approach used at the beginning and end of the sequence. Here are some suggestions:

Start and end sequences with a visual approach that does not call for loud sound. For example, start a sequence showing a waterfall with a long shot or by panning from the surrounding mountain area to the fall. This scene can start silent with the sound of the waterfall fading in while you pan or zoom. End in a similar fashion with a zoom out or pan.

Start a scene of a band in a parade with the band faraway or filmed at the wide-angle setting, then bring up the sound as the band moves closer. Let the band move completely out of the picture before you stop the camera.

Since super 8 sound cameras usually have automatic level adjustment and, therefore, no control to increase or decrease the sound level, the sound fades must be produced in other ways. One could keep the microphone cov-



1



2

1. Sound editing equipment consists of an editing viewer equipped with a sound reader, which is usually attached to the viewer. The sound recorded on the film is heard through an earphone, while the picture is visible on the viewing screen.

2. A sound reader is basically a magnetic head which picks up the sound from the film and amplifies it so it can be heard through the earphone. It is usually equipped with a volume control.

ered at the beginning with a cover (your hand for instance) being removed as the camera starts. Fades can also be produced later in a super 8 projector with superimposition control. (See "Sound for Super 8," October and November, 1974 issues.)

When sound is a dominant part of the scene, it does not look right to have the sound fade out while the action continues—while people are still talking or singing, or while the drummer in a band keeps hitting his instrument. Scene transition is greatly improved when the sound fades out at the same time the image fades. Some sound cameras on the market have a built-in automatic fade control, which usually requires nothing more than pressing a button. This feature is most useful when making sound movies.

Introducing sequences in the style of television news programs can simplify sequence connection. Instead of starting with a scene of the subject that calls for instant sound, open with a shot of a reporter describing what comes on the screen next. This can be followed by a straight cut to sound and image of the subject, the waterfall, the sports event, the city street, etc. The sequence can be ended by filming the reporter's closing comments.

SOUND EDITING

Having followed the previous suggestions, one could end up with a presentable super 8 sound film that does not require extensive editing. Nevertheless, some editing will probably be necessary, especially if the film is used for more than just family entertainment. Contrary to some beliefs, single system sound films can be edited but in a limited fashion and only with careful consideration of the sound track.

Before the film is cut apart, the filmmaker must decide whether all the camera-recorded sounds are to be left in the film and whether the film's effectiveness can be improved by superimposing music, sound effects and/or narration over some portion of the film. You may decide to erase the camera-recorded sounds completely and record a new sound track over some sections of the film. Your decision should be based on the content of the film, the individual scenes and the type and quality of the camera-recorded sounds.

Most single system sound films can be improved by adding some sounds after filming, as is done on practically all professional movies, where camera-recorded sounds are intermixed with

sections of background music or narration. Sound mixing techniques improve most films because the new sounds add variety.

Appropriate background music is more effective over views of beautiful buildings in Florence, Italy, than the street noises the camera microphone picked up. The sound of waves crashing on the shore to accompany the visual image adds impact for awhile, but if the wave sequence continues for over 30 seconds or a minute, the visual effectiveness can probably be enhanced by dissolving the sound of the waves into appropriate music, perhaps the end from Debussy's "La Mer."

Sections of the film with location sounds can be edited in a limited way. Editing can be a problem, since the sound is recorded 18 frames ahead of the image at different places. A miscut may make it impossible to put the film back in shape without a noticeable defect in the image or in the sound.

It's important to understand how single system sound is recorded on the film and what happens to sound and image when a cut is made.

SOUND/IMAGE EDITING CHART

Example 1 in the accompanying Sound/Image Editing Chart illustrates a strip of super 8 film with three separate single system sound scenes. In the chart, "Image 1" refers to the picture portion of scene 1 and "Sound 1" refers to the sound for scene 1. The beginning is at the right, which means the film runs from left to right as it normally does in the editor. Scene 2 is to be eliminated, so that scene 3 follows immediately after scene 1. The editing starts with cutting scene 1 at the end. There are two possibilities—cutting at the end of the sound (example 2a) or at the end of the image, 18 frames farther back (example 2b). Cutting the scene at the end of the sound (2a) is possible, but one must realize that it means cutting off the last 18 frames of the visual image. Example 2b shows the second possibility—a cut at the end of the image. This means keeping 18 frames of the sound track belonging to scene 2, the scene we plan to eliminate, so a cut at that point is only possible if that portion of sound track is silent or is erased afterwards in the projector.

A cut need not be made at the very end of a scene, but regardless of where it is made, the result is always the same. Cutting for the sound eliminates 18 frames of the image belonging to the sound track. Cutting for the picture eliminates 18 frames of sound

belonging to the cutout section. Obviously, you will have to compromise somehow. The suggested cutting procedure is as follows:

Before making a cut, listen to the sound track through the sound reader. Mark the frame where you feel the sound should be cut with a grease pencil, then run the film through the viewer to determine whether a cut at that point is satisfactory and does not cut off any important part of the image. If so, make the cut; if not, find another place where a cut is satisfactory from both visual and auditory standpoints.

The next editing step is to cut the

beginning of scene 3. Example 2c illustrates a cut made at the first frame of scene 3. This is satisfactory from a visual point of view but means cutting the first 18 frames of the sound track from scene 3. We can keep these first 18 frames of the sound track by cutting at the beginning of the sound (example 2d). This, however, keeps the last 18 frames of scene 2 in the film, which of course is unacceptable. Wherever the cut is made, one second of sound track belonging to the first 18 frames will be lost. It shouldn't be too distracting to hear the sound begin about one second after the picture appears on



Change Suzanne to Jane in seconds.

With Falcon PhotoGallery Wall Brackets you can display your beauties in a brand new, inexpensive way. Without costly frames.

And, as fast as you have a change of heart, that's how fast you can change or re-arrange your photos. In seconds, old matted or flush mounted prints slip out and the new ones slip in. Any size picture fits.

Unique friction rollers in each bracket grip firmly but gently, without leaving any tell-tale marks. And they continue to hold. Print, after print, after print.

PhotoGallery Wall Brackets are available in black with wood accent or white with brushed aluminum to blend with your room decor. And they're

easy to put up on any wall.

So follow your heart, but be faithful to Falcon. We'll make sure Jane never meets Suzanne.

Falcon Safety Products, Inc.,
Mountainside, N.J. 07092



When photography is more than just a hobby.

HOME MOVIES

your screen. This phenomenon is a common occurrence on television news programs when an announcer is speaking in the studio and the program director cuts to a piece of footage filmed before the broadcast. The gap between the beginning of the picture and the beginning of the sound is so slight that most of us seldom notice it.

The cutting procedure for scene 3 is the same as for scene 2. Listen to the track through the sound reader, mark a frame where the sound track can be cut, then check in the viewer to see whether a cut at that point will cut the image at a satisfactory place. When the cuts are made, we end up with scene 1 having 18 images belonging to the sound track cut off and with scene 3 having 18 frames of the sound track cut off (example 3).

When spliced together, the result is as follows: when the film runs through the projector, at the moment the first frame of scene 3 comes in the aperture behind the projection lens (example 4a), the soundhead is opposite the sound track 18 frames ahead of the cut and still plays back the sound from scene 1. In other words, when the image changes from scene 1 to scene 3, the sound does not change. The soundhead continues to play the sound from scene 1 until the splice in the film reaches the soundhead (example 4b), which is 18 frames, or one second, after the scene changed on the screen. While it is not too objectionable to have the sound from scene 3 come in late, it is objectionable to have definite sounds from scene 1 continue over scene 3.

While nothing can be done to eliminate this delay in the sound, the effect can be minimized or eliminated in many ways. Here are some ideas to keep in mind while filming:

1. Let camera run at least one second after a natural break in the sound, so you have at least 18 frames without any important sound at the end of the scene. (These are the 18 frames of sound that go with the beginning of the next scene when a cut is made.)

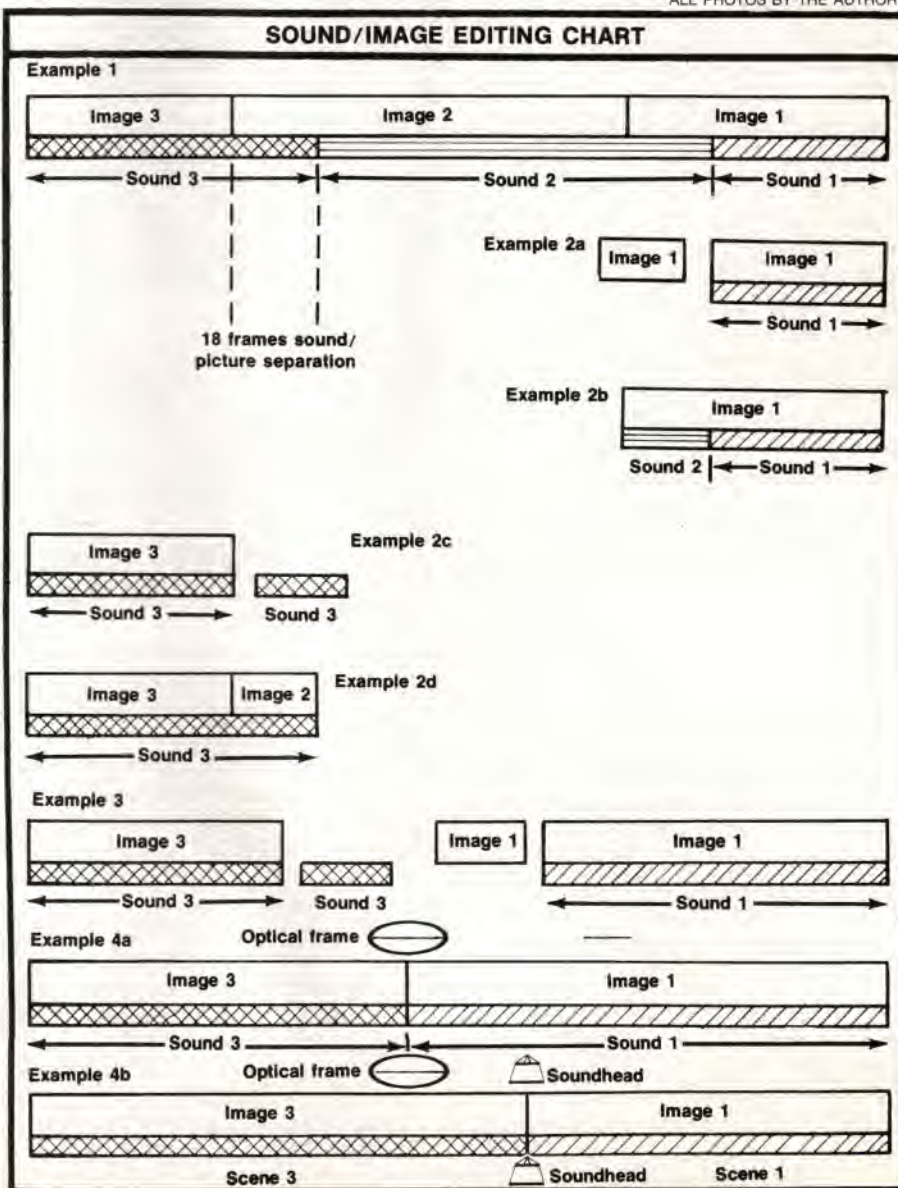
2. Start the camera at least one second before any important action takes place (before a person opens his mouth, for example) so you can cut the film 18 frames ahead, where the sound starts.

3. End sequences with fade-outs, start scenes with fade-ins to eliminate a definite visual point of scene change.



Any scene showing an announcer with a microphone certainly calls for synchronized sound filming. Postrecorded sound would seem unprofessional in this situation.

ALL PHOTOS BY THE AUTHOR



Other possibilities can be accomplished while editing:

4. Fade out the sound at the end of a scene so the sound ends at the end of the image, rather than running into the next scene. Fade in sound at beginning of next scene. (See "Sound for Super 8," October and November, 1974 issues, for details on how this is done using the superimposition control on a super 8 sound projector.) Projector-produced fades must be made after the two ends are spliced. If you produce the fades first, then edit the film, you end up with the usual sound separation problems.

5. Bridge scene changes with post-recorded sounds, superimposed over location sound or used instead of it. This is the most professional method with the greatest number of possibilities; for example, this method could be applied in a sequence ending with a 747 jet plane taking off in New York, followed by another scene showing the streets of Paris. While the jet lifts into the air, and perhaps 10 seconds before the end of the scene, appropriate travel music could be superimposed (with the sound of the jet still heard in the background). The music could continue over the scene change for perhaps three seconds, followed by Paris street noises.

Instead of music, narration or sound effects could be used in a school activity film. A scene of the school choir might be followed by a close-up of a saw in the woodworking shop, bridged with narration saying something like, "About 20 percent of the students take part in the vocational guidance program." The narration would start over the choir scene so that the word "vocational" falls over the scene change. Another possibility is to eliminate the location sounds and add a completely new track.

For complete and practically unlimited editing of super 8 sound films, the filmmaker could go the route occasionally used in 16mm, where the sound from the film is transferred to separate tape (like super 8 fullcoat) which then provides all the possibilities of double system. The track edited to the film is transferred back to the striped film, perhaps in the form of a track mixed with narration, background music and additional sound effects.

All the possibilities and all the equipment for professional results exist; it is simply a matter of how much time and effort one is willing to spend. Your best efforts are sure to produce a film you'll be proud of for years to come. □

The ego enlarger.



If your talent is getting lost between negative and print, the Minolta enlarger can help you look as good as you really are. It will, for example, capture every hairline detail, thanks to C.E. Rokkor-X enlarging lenses, and an exclusive design that eliminates even slight vibration. For consistent and precise control, the color head has built-in, fade-free cyan, magenta and yellow dichroic filters. You can fine-tune filtration changes continuously from CC 0 to CC 150. And even in the blackest black of a color darkroom, you're always sure of exactly what you're doing.

All the major controls are grouped around the color head to keep your work area free and f/stops and filtration readouts are illuminated.

The Minolta enlarger is a modular system, so you can start with black-and-white and build up to color. For literature, see your dealer or write Minolta Corp., 101 Williams Dr., Ramsey, N.J. 07446.

Minolta Color Enlarger System

It turns your hands into eyes.

THE NEW Soligor/JOBO DEVELOPING TANKS CAN'T BE BEAT. OR BENT. OR BROKEN.

In fact, our tanks are so sturdy you'll never have to worry about leaks—light or chemical. Or finding undeveloped patches on your film because the reel's been bent out of alignment.

But strength is only one reason our tanks and reels are unbeatable. Here's more. Our tanks are designed to hold the proper temperature longer and pour faster. And the lids screw on to eliminate the most embarrassing darkroom accident. The reels offer a dual film capacity and are easy to load. And they're adjustable, and transparent. You can use the same reels for 35mm, 126, 120, 220, 410 and 16mm film. That means fewer reels to buy, and fewer to store. We have a whole line of unbeatable darkroom equipment. Film loaders, paper safes and more. All designed to make light work of your time in the darkroom.

Write for information on the complete Soligor Darkroom Equipment line.



AIC Photo, Inc., Carle Place, N.Y. 11514



NOW...
FROM THE
EDITORS OF
PHOTOGRAPHIC
MAGAZINE...
THE MOST
EASY-TO-USE
PHOTOGRAPHY
GUIDE EVER
PUBLISHED!

Petersen's

COMPLETE PHOTOGRAPHY LIBRARY

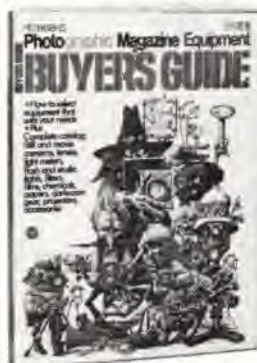
Here are 6 BIG volumes— 544 pages
—over 2,000 illustrations... that will make YOU
a better photographer!

The editors of Photographic Magazine invite you to discover the joys and rewards of photography. Petersen's **COMPLETE PHOTOGRAPHY LIBRARY** holds everything you'll need to help you start taking and making truly spectacular photographs. The **BASIC GUIDE TO PHOTOGRAPHY** will guide you as you select equipment, process film, print your own pictures and more. **PHOTO EQUIPMENT YOU CAN MAKE** supplies complete plans and easy-to-follow instructions for equipping your own studio. **CREATIVE DARKROOM TECHNIQUES** helps you master photo printing as you become an expert in all facets of darkroom procedure. **PHOTO LIGHTING TECHNIQUES** tells you all about natural and artificial light and what it takes to make each picture perfect. **ARCHITECTURAL PHOTOGRAPHY** shows you the "ins & outs" of interior/exterior photography. And finally... **PHOTOGRAPHIC BLUEPRINT SERIES** rounds out the set with how-to's for cameras, meters, lighting, darkroom and more.

You don't need expensive equipment! You don't need years of training! The information contained within the pages of Petersen's **COMPLETE PHOTOGRAPHY LIBRARY** will make YOU a better photographer!

SAVE NEARLY 20% BY ORDERING THRU THIS AD!

All 6 Books For Only **\$16⁹⁵** (A \$20.70 Value!)



FREE BONUS!

You get the **PHOTOGRAPHIC MAGAZINE EQUIPMENT BUYER'S GUIDE** absolutely free when you order your Complete Photography Library. This comprehensive guide to photographic equipment lists hundreds of products: cameras, lenses, filters, darkroom equipment and much more. It's a \$2.95 value!



LIMITED OFFER!

Petersen's **COMPLETE PHOTOGRAPHY LIBRARY** is also available in a beautifully bound hardcover edition. Supplies are limited so order your hardcover edition today.
Only \$23⁹⁵
(A \$32.70 Value!)



PETERSEN BOOKS

Dept. PH-4 6725 Sunset Blvd., Los Angeles, CA 90028

Send me the **COMPLETE PHOTOGRAPHY LIBRARY** and my **FREE** Photographic Magazine Equipment Buyer's Guide (available in soft cover only) as I have indicated below:

____ Softcover Edition @ \$16.95 plus \$1.05 postage & handling
____ Hardcover Edition @ \$23.95 plus \$1.55 postage & handling

Calif. residents add 6% sales tax.

My check or M.O. for \$_____ is enclosed.

Charge your purchase ☐ Master Charge* ☐ BankAmericard

Acct. No. _____

*Interbank No. _____ Expiration Date _____
(4 digits above your name)

X _____
Sign Your Name as it appears on your Bank Credit Card

To Avoid Delay—Print Clearly

Miss _____

Mrs. _____

Mr. _____

First Name _____

Middle Initial _____

Last Name _____

Street _____

City _____

State _____

Zip _____

This offer void July 31, 1976.

Copyright Petersen Publishing Company 1975

SATISFACTION GUARANTEED OR YOUR MONEY BACK

KEN WHITMORE:

□ We have all become so accustomed to the multitude of images that bombard us from the mass-media in every aspect of our contemporary life that we often fail to notice or appreciate the artistry of the very fine photographs that make up the final impact of the "message." But if these images are taken out of context, the vast and unique contributions that advertising and editorial photographers have made to the art of our culture become readily apparent. Ken Whitmore is a commercial photographer whose work epitomizes the ideal of using disciplined and highly refined techniques for photographic problem solving. As the photographs shown here clearly illustrate,



Ken is a master of manipulating photographic ideas and concepts within the confines of the very exacting and demanding world of advertising photography. Ken's subtle refinements, precise techniques and creative visualizations can't help but stimulate and inspire all of us who maintain an active interest in photography.

Difficult subjects, the challenge of complex assignments, the picturing of elusive moods and feelings are all made to look easy and natural. The ease with which we are able to accept the incredibly sophisticated photographs like those shown here just serves to strengthen the respect that must be given this most disciplined, dedicated and imaginative group. □

DISCIPLINED DIVERSITY

SUBJECT: Sportswear fashion ad photographed in a large mirrored box

LIGHTING: Electronic flash bounced through spun glass sheet

CAMERA: Nikon F with 55mm lens

EXPOSURE: 1/60 at f/22

FILM: Kodak Ektachrome-X converted to black and white by color internegative



KEN WHITMORE

SUBJECT: Lingerie for a fashion advertisement
 LIGHTING: Window light
 CAMERA: Hasselblad 500C with an 80mm lens
 EXPOSURE: 1/60 at f/8
 FILM: Kodak Tri-X developed in Kodak D-76



SUBJECT: Catalina Sportswear in a dodecahedron (12-sided) environment specially constructed of metal and mirrored Mylar
 LIGHTING: Electronic flash bounced through spun glass sheet
 CAMERA: Hasselblad 500C with a 40mm wide-angle lens
 EXPOSURE: 1/60 at f/22
 FILM: Kodak Verichrome Pan developed in D-76



SUBJECT: Three-image montage for swimwear advertisement
CAMERA: Nikon F with a 55mm lens, a 105mm lens and a 35mm lens
EXPOSURE: 1/125 at f/5.6
FILM: Kodak Kodachrome II converted to black-and-white by a color internegative



SUBJECT: Silverware illustration
LIGHTING: Electronic flash in a large bank of soft-lights
CAMERA: Nikon F2 with a 28mm wide-angle lens
EXPOSURE: 1/60 at f/22
FILM: Kodachrome II converted to black and white by color internegative

KEN WHITMORE



SUBJECT: Photographed as part of an environmental series for Atlantic Richfield book
 LIGHTING: Daylight
 CAMERA: Nikon F with a 105mm telephoto lens
 EXPOSURE: 1/125 at f/4
 FILM: Kodachrome II converted to black-and-white by color internegative



SUBJECT: "Windmills," travel photograph made in Merida, Yucatan, Mexico
 CAMERA: Nikon F with a 180mm Sonnar lens
 EXPOSURE: 1/125 at f/5.6
 FILM: Ektachrome X; original transparency used as a negative in the enlarger, exposing black-and-white paper



SUBJECT: Self-promotion poster campaign
LIGHTING: Daylight
CAMERA: Eastman Kodak 616 folding camera
EXPOSURE: 1/100 at f/11
FILM: Verichrome Pan developed in D-76



KEN WHITMORE

SUBJECT: "Unfair To Women" used on cover of *Los Angeles Times West Magazine* for Labor Day issue
 LIGHTING: Diffused daylight
 CAMERA: Eastman Kodak 616 folding camera
 EXPOSURE: 1/50 at f/8
 FILM: Venchrome Pan developed in D-76



SUBJECT: "Chuck-Wagon Cook" photographed for *Los Angeles Times Home Magazine* to illustrate a recipe
 LIGHTING: Backlit by the sun with the shadows filled by reflection from a large sheet
 CAMERA: Nikon F with a 17mm Takumar wide-angle lens
 EXPOSURE: 1/60 at f/8
 FILM: Kodachrome II converted to black-and-white by a color internegative

KEN WHITMORE



SUBJECT: Portrait
LIGHTING: Open shade in late afternoon
CAMERA: Nikon F with 55mm lens
EXPOSURE: 1/250 at f/6.3
FILM: Kodak High Speed Ektachrome, daylight type, converted to black-and-white by color internegative

Now, a Braun flash for every photographer.



This is all you need to know about electronic flash: Braun. After all, Braun invented the VarioComputer flash in the first place: energy-saving thyristor technology, with exclusive built-in bounce flash design. Braun makes the widest range of thyristor flash units in the world. Braun has been making all the advances worth making: built-in automatic bounce, wide angle coverage, an indicator that tells you in advance whether there's sufficient light available. And now Braun introduces a whole new lineup of brilliant Braun 2000 VarioComputer flash units, and there's one in it for you.

28 BVC. Low priced, but pure Braun.

All the benefits of thyristors — up to three thousand flashes, quick recycling — plus economy of AA batteries plus Braun quality, all at the kind of price you'd expect to pay for non-thyristor, non-automatic flash.

34 VC. The first step into Braun bounce.

Rechargeable nickel-cadmium batteries; wide-angle coverage — and built-in automatic bounce flash, at our lowest price. Now you can shoot soft, flattering portraits and not go broke doing it. (And because you get so many flashes, you can experiment to your heart's content.)

42 VC. The Braun powerhouse.

A guide number that pours on the light, and up to 2,400

flashes per charge. That makes it our most powerful shoe-mount VarioComputer flash. Wide-angle coverage, of course; a built-in indicator light; built-in bounce. (It wouldn't be a Braun without them.)

40 VCR. The Braun quick charger.

For photographers in a hurry: it recharges, dead to full strength, in an hour, and it recycles in a third of a second. Like every Braun 2000 VarioComputer flash, it gives you a choice of f/stops. A beautiful piece of equipment, at a reasonable price.

F900 and RL915. The Braun Professionals.

Brand new, and the answer to a pro's dream: the fastest and most powerful professional computer flash units in the world, equipped as standard with VarioComputer, computer check signal, 120° swivelling reflector, integrated wide angle diffusing lens and either rechargeable nickel cadmium batteries or 510-volt powerpack. With the optional Braun VarioControl external sensor, you get a choice of 22 f/stops, automatic range of up to 100 feet, and you can hook together as many as 4 extension lamps. After this, there's nothing left to say about thyristor flash.

BRAUN

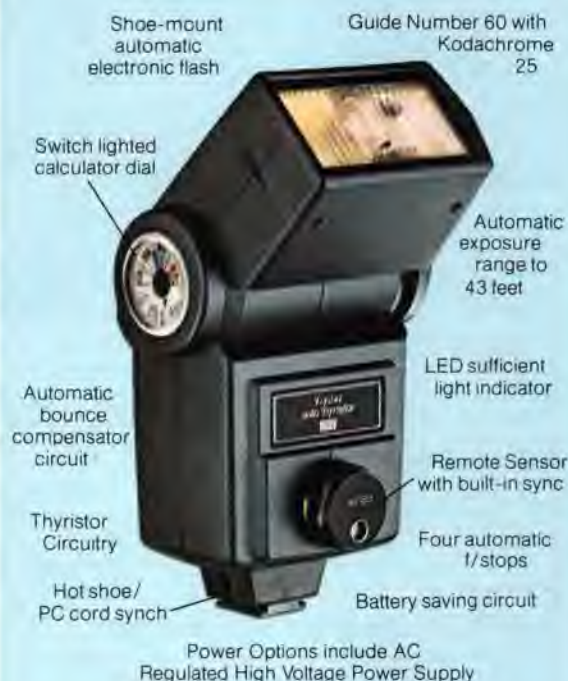
The first family of flash.

To find out more about Braun Flash, see your Braun dealer, or write: Dept. P4, Braun North America, a division of The Gillette Company, 55 Cambridge Pkwy., Cambridge, MA 02142; in Canada, Braun Electric Canada Ltd., Ontario.

The Vivitar Complete Light Machine-

a systems approach to portable electronic flash.

The basic Vivitar 283



The Vivitar 283 System



The basic premise behind the 283 System is that it's easier and more satisfactory to change the nature of light at the source rather than in the camera. So the 283 gives you a terrific variety of options in the control of light. It lets you change direction, color, intensity, and angle of coverage...simply the most sophisticated and versatile portable flash system available.

1 What it does.

Let's look at the 283 in use. You're shooting with Kodachrome 25 and your 283 is in the automatic mode. You have a choice of 4 f/stops (f1.4, 2, 4, and 5.6) for depth of field control. (If you were shooting with ASA 100 film, your stops would be f2.8, 4, 8, and 11). You want to use bounce light on your subject, and angle a bit too. 1a The remote sensor is on the camera and connected by its cord to the flash unit 3 feet at camera left. You're going to bounce the light off the ceiling, so you decide whether to use the 45, 60 or 75° click stop bounce position for the flash head. As you set it, the BCC Bounce Compensator Circuit tells the sensor to adjust itself to compensate for possible under exposure due to bounce fall-off and to "open up" the shadows caused by light coming from above. You push the open flash button, your flash fires, and you look at the built-in LED indicator. It's on for a second and you know you've got a proper exposure. All you've done so far is use the basic 283 flash unit. Now read on...

2 Power Sources

The standard power source for the 283 is 4 AA alkaline batteries in a special battery holder. Extra holders are available, so you can carry fresh back-up batteries ready



to reload in an instant. Expect 75 to 800 flashes with one set

of batteries. Recycle time is 0.5 to 9.0 seconds.

Optional equipment for the 283 includes an SB-4 AC Adapter for use when there's a house current (105V-125V) outlet handy.

Another optional power source is the NC-3 NiCad Battery Pack. The NC-3 recharges in only 15 minutes



in Vivitar's new "Charge 15," a fully automatic external charger. A "charging" indicator light goes off to tell you the pack is recharged.

3 High Voltage Battery Pack

Our other new power source is the HVP-1 High Voltage Battery Pack Regulator. The HVP-1 converts a 510 volt photo battery to the 330 volts the 283 requires and maintains that voltage to plus or minus 10 volts, the equivalent of better than 0.25 f/stop. Recycle time is 0.5 to 1.5 seconds. In manual operation, you'll get up to 1,000 flashes. And in automatic operation, you may wear out before the battery does.



4 Flash Lens Adapter

This precisely engineered attachment snaps on over the flash head. It positions Vivitar Flash Filters and Vivitar Variable Angle Flash Lenses at an exact distance from the head. Once you have this adapter and the Vivitar filters and lenses, you can do things with flash you never thought possible.

5 The Soft Bounce Reflector

Here's a lightweight holder that snaps onto the 283 and



allows you to take perfectly controlled bounce/soft light portraits, or still life studies. You use the back of a Kodak grey card and get a standardized 90% white reflectance so its effect is totally predictable. Used in combination with color filters, gives soft, colored bounce light.

6 Variable Angle Flash Lenses

Wide Angle and Telephoto Flash. Two lenses for wide angle, two for telephoto. The



extra wide angle is for use with 24mm camera lenses. The regular wide angle is for 28mm camera lenses. Because these wide angle flash lenses disperse the light over a much greater area than normal, Guide Numbers and effective range are reduced accordingly. The opposite is true with the telephoto flash lenses. The short tele lens is for shooting in the 70mm and up range. Guide Number is increased to 79 and automatic range to 56 feet. The long tele lens is for 135mm and longer lenses. GN becomes 87 and the auto range extends to 62 feet. Or, if you're shooting at f/2 with ASA 100 film, in manual operation you could reach to 85 feet.

(Combine lenses with filters for special effects. The adapter unit accepts both inserts together.)

7 Filtered Flash

A special six-filter kit (for use with the adapter) includes a 4X neutral density filter for extreme close up flash exposures in automatic operation. A UV filter to eliminate Ektachrome "blues." A Type B conversion filter to give proper color balance when using Type B film with electronic flash. And red, blue, and yellow filters for special effects.



8 Quick Release Flash Bracket

This bracket gives you a solid, controlled platform for flash shooting. The quick release lets you remove the pistol grip/flash unit for off camera flash and aim it anywhere you want for bounce or direct lighting. The flash shoe rotates 360° for complete control of direction and angle. Choice of 35mm or 6 x 6 camera bracket. A cable release for the grip is available, too.



See the Vivitar 283 Complete Light Machine at your Vivitar dealer. Because the 283 is a revolutionary approach to portable lighting, we anticipate, at the beginning, a tight availability, especially on some of the accessories. Please be patient. You'll find the system worth waiting for.

Marketed in the U.S.A. by **Ponder & Best, Inc.** Corporate Offices: 1630 Stewart Street, Santa Monica, CA. 90406. In Canada: Precision Cameras of Canada, Ltd., Montreal.

Vivitar®





GALLERY '76

□ The photographs on these pages were taken by photographers of professional caliber. In order to provide these talented individuals with a forum for displaying their best efforts, we present this month's Gallery '76. If you feel your photographs are of similar caliber, send us the evidence (along with a stamped, self-addressed return mailer—in case we don't agree). There is no limit to the size or number of photographs you may submit to Gallery '76, but only black-and-white prints will be accepted. Your name and address and all pertinent data: camera make, lens, film, exposure, special printing techniques, etc., must be printed *on the back* of each picture. Also, in any photograph in which a person or persons can be identified, the photograph must be accompanied by a signed release from each recognizable individual. PhotoGraphic will pay \$25 for each picture published. Prints are accepted for one-time use and will be returned after publication date. □



1. Len Harris captured the mood and expression of this contemplative mime with a Hasselblad and 80mm lens with No. 25 filter. Kodak Panatomic-X Film was exposed for $\frac{1}{4}$ at $f/4$, and the resulting negative printed on Ilford Velvet Stipple No. 3 paper.

2. Ray Grosso's portrait evokes an aura of mystery and romance, due to setting, subject and interesting composition. Photo taken with Nikonmat EL and 50mm Nikkor lens loaded with Kodak Tri-X Film, exposed for $\frac{1}{125}$ at $f/16$.

3. These San Francisco street performers were photographed by Lester E. Rich, who captured their earnest expressions and reflected city buildings with a Pentax Spotmatic and 105mm SMCT lens loaded with Tri-X film, exposed for $\frac{1}{125}$ at $f/5.6$. Negative printed on Agfa Portriga Rapid No. 3 paper.

4. One could almost miss the subject for the forest in this intriguing photograph. The natural setting provides textured framing for Kenneth Cain's young friend. Photo taken with Rolleiflex and 75mm Rollei lens. Kodak Plus-X Film was exposed for $\frac{1}{30}$ at $f/22$, and negative printed on Agfa Brovira No. 3 paper.

5. Rectangular composition and division of space into quarters add graphic interest to this photograph by Rick Bursky, who used a Canon F-1 and 50mm Canon lens to record the scene. Tri-X film was exposed for $\frac{1}{60}$ at $f/5.6$, and resulting negative printed on Kodabromide RC N paper.

the unicolor color print system

by steven rosenbaum

color printing, part IV:



Shown in this photo is a sampling of products available in the Unicolor system including a few unique items like the Unicolor Protective Print Spray and the Unicolor Focusing Aide. Unicolor also offers a choice of either resin-coated or conventional paper-based color print papers.

This is the fourth in a series of color printing systems reports. It combines with the other three reports to provide you with a side-by-side comparison of the major available systems for making color prints from color negatives. Each of the four systems reports, in addition to describing the products available, has concentrated on some specific aspect of color printing technique as well.

The current system report, Part IV in this series, deals with the Unicolor System, and it investigates some special printing techniques as well.

PAPER

Unicolor Resin Base Color Print paper is available in three surface finishes—glossy, matte and silk. The choice of surface is a matter of personal taste and your intended use; however, silk or matte finishes are generally preferred when the prints are likely to show fingerprints caused by excessive handling. The glossy surface is ideal for prints which must reveal maximum

detail or for those which are intended for mechanical reproduction (such as magazine illustration) or otherwise protected from handling with a glass frame, for example. The paper is available in all popular sizes from 5x7 to 16x20 inches. When used in conjunction with the Unicolor-Mitchell Picture Box II, the 8x10-inch paper can be easily masked off to produce nearly any combination of print exposures up to eight 2½x3½-inch prints, four 3½x5-inch prints or two 5x7-inch prints. The single sheet of 8x10-inch paper is then processed and trimmed apart when dry. This multiframed easel (including borderless 8x10-inch prints as well), which is fully compatible with any 8x10-inch paper, black-and-white or color, eliminates the messy processing of small sheets of paper containing individual exposures. The Unicolor-Mitchell easel is ideal for producing wallet-size prints and test prints to determine exposure or filter pack requirements.

The Unicolor Resin Base paper may

be handled in total darkness or by the light provided by a Wratten No. 10 or No. 13 safelight filter in a suitable fixture, using no more than a 15-watt bulb for illumination. The resin coating allows this paper to be air dried, and since the finish is built into the paper, no ferrotyping is necessary to produce a glossy surface on glossy paper. The paper will lie reasonably flat with no special handling; if you intend to frame your photographs and want to mount them first, the prints can be dry mounted using dry-mounting tissue made for resin-coated papers. You will also need a dry-mounting press set at the manufacturer's recommended temperature. Under no circumstances should the Unicolor (or any other resin-coated product) paper be placed on a print dryer! The paper is designed to be processed in the Unicolor R2 chemistry. Incidentally, the paper is only compatible with Unicolor's R2 chemistry, with other chemistries causing stains on the Unicolor resin-coated papers. However, you can use the Unicolor R2 chemistry to process other resin-coated papers with no problems whatsoever. Suggested list price for 100 sheets of 8x10-inch Unicolor Resin Base Color Print paper is \$38.95.

CHEMISTRY

The Unicolor R2 chemistry is supplied in easy-to-mix liquid concentrate form. Personally, after much use, I find that it is only the developer that can (and will) have a shortened life expectancy once mixed. This will depend upon conditions of storage and many other factors. The life expectancy of the developer, then, can be anywhere from one to two weeks. But the secondary solutions (stop bath, Blix and stabilizer) have very long working lives. I have mixed as much as a gallon of each and stored them in separate bottles for months without any noticeable loss of working strength. Therefore, the way to go, in my opinion, is to mix the secondary solutions all at once and mix the developer as needed. Toward



Top photo shows effect of texture screen when added to ordinary color photo, below. Texture screens are just one of the variety of special printing techniques which will enhance do-it-yourself color prints.



Top: This interesting special printing technique is accomplished by printing a black-and-white negative through a blue filter to produce a yellow monochromatic print.
Left and Above Right: Of course, the Unicolor materials can also produce conventional color prints of excellent quality, as illustrated.

ALL PHOTOS BY THE AUTHOR.

color printing, part IV

this end, Unicolor Mixee Cups may prove useful. The suggested list price of the eight Mixee Cups is \$4.99.

PROCESSING

Total processing time when using the Unidrum will vary from eight minutes to just under 20 minutes, depending on the processing temperature you choose. The recommended processing times allow for processing temperatures ranging between 75° and 115°F. You can process your prints at any of these recommended temperatures, but the instructions clearly advise that you stay with the same temperature each time you process so the results of your printing efforts will be consistent. This is not only true of the Unicolor system but other systems as well.

As of late, there has been much discussion, pro and con, about the relative merits of using a stabilizer bath for color prints. Some claim that a stabilizer is not needed to prevent premature print fading (and all color prints will fade after excessive exposure to bright light and high humidity), while others claim that a stabilizer is required. Laboratory tests have indicated that when a stabilizer is not used, you will have to give your prints a final water wash that is three to four times longer than needed to get the residual chemicals out of the paper. This means that the final wash can be as long as the actual processing time for a color print and can be time-consuming and counterproductive. Therefore, Unicolor will continue to package a stabilizer bath with their chemistry, and it should be used to shorten washing times and to help guard against premature fading of the colors. The suggested list price for the one-gallon size of Unicolor R2 chemistry is \$19.99.

EQUIPMENT AND MATERIALS

A set of Unicolor Color Printing Filters consists of 22 Mylar (not acetate) filters that are dyed through. That is, the colors are an integral part of the filter material. Consequently, the filters can be washed to remove smudges or fingerprints without any harm to the fil-

ters. Also, they are highly heat resistant and are not subject to premature fading as is the case with the older type acetate filters. The filters are available in 3x3-inch or 6x6-inch sets. Each set consists of individual filters, clearly identified in ink on the edges and includes an ultraviolet absorption filter plus a variety of cyan, magenta and yellow filters in graduated values, plus two red filters (which are useful when printing the new color negative materials or when making prints from slides). The filter kits come complete with storage dividers, instructions and even self-stick labels should you desire larger, easier-to-read identification marks. The suggested list price for the 3x3-inch filters (which are housed in a steel filing box for added convenience) is \$16.99; the 6x6-inch filters list for \$24.99.

UNICOLOR-MITCHELL DUOCUBE

A recent addition to the Unicolor line is the Unicolor-Mitchell Duocube. The Duocube works as a subtractive calculator when making color prints from color negatives and will, in addition to giving the correct filter pack, give the correct printing time as well. But that's not all; it has been designed to provide the same kind of information when making color prints from color slides in Unicolor's PFS system. Since the direct-reversal process (printing from slides) is beyond the immediate purpose of this system report, I will say that it is unlikely that you will outgrow the Duocube regardless of how you make your color prints.

In use, the Duocube is placed on a sheet of paper, and the projected image is diffused with a special diffuser. By following the instructions, you process the print, locate a gray segment and quickly determine the filter pack and the exposure time. Unlike other such devices, the Duocube is unique in the respect that the cube is made up of the same Mylar filter stock as the filters themselves, and the Duocube also contains a self-compensating density mask that makes all of the color segments print with the same apparent density, thus making it easier to find and identify the gray segment. Another unique feature is the way the calculator is constructed. Overlaying segments of identical filter stock (for the negative calculator it is in .05 units) are built up from zero to .20 filtration requirement. In use, for example, if the test print requires the addition of, say, .15 yellow filtration, you would *not* add a .10 and a .05, you would add three number .05 filters to get the require-

ment. In this way you will always be using the *exact* filters required by the test print. This system makes for a much more exact procedure. The Duocube uses cyan, magenta and yellow to make up all six of the printing colors. It is an invaluable addition to the Unicolor system and an invaluable aid to the darkroom worker. The Duocube comes with a comprehensive dual set of instructions (one for slides, one for negatives), a diffuser and a gray comparator for locating the gray patch on a test print. The suggested list price of the Duocube is \$24.99.

The Unidrum II Daylight Color Print Processing Drums are available in three different sizes: 8x10, 11x14 and 16x20 inches. The molded plastic design of these drums allows for processing any number of prints (in the case of the 8x10 drum, prints even smaller than 8x10 can be easily processed) without the need for internal spacers that can, and usually do, get lost in the darkroom. Where other drums use a force-fit end cap, the Unidrum II has a genuine locking cap that cannot cause an accidental broken fingernail when working in a hurry. A quarter turn of the end cap will safely lock it in place with little or no pressure required.

Once the paper is safely loaded in the drum, all processing steps can be carried out in normal room light. The drum can be rolled back and forth manually to properly agitate the print, or it can be placed on a motorized agitator base such as the Uniroller. The Uniroller provides uniform and constant agitation by allowing the exposed print to come into contact with the processing solutions in a repeatable way every time. Unique to the Uniroller is an internal switching mechanism which causes the drum to reverse its direction as it goes through the processing cycle. The reversing action eliminates any chance of streaking caused by an improperly balanced unit or a unit that is not perfectly level in use. Suggested list price of the 8x10-inch Unidrum II is \$19.99; the Uniroller has a suggested list price of \$59.99.

COSTS

The combined cost (paper and chemicals) for an 8x10-inch print is approximately 70¢. This figure is based on the suggested list price of the materials, as follows: Unicolor Resin Base Color Print paper, 100 sheets = \$38.95 = 39¢ per 8x10-inch print; Unicolor R2 chemistry to process 64 prints at \$19.99 per gallon = 31¢ per print.

Unicolor has a series of technical

Begin now to make extra money in your spare time

FREELANCE for FUN and PROFIT

Associated Photographer International will show you how to get paid assignments, how to shoot them, how to overcome problems with creative pro tricks, how to price your work ... all the while you are reaching higher levels of skill and freelance income.

API is a clearing house for **money-making, creative and selling ideas** for over 4000 members in the US and 50 foreign countries. As an API member, here is what you will get:

* **Monthly APIdea Newsletters** give you an insider's view of freelancing ... from **photo-journalism to glamour, commercial, wedding, portrait, nature** — the whole range of income possibilities.

* Extraordinary personal service like **unbelievable money-savings deals**; critiques, career and personal questions answered. **We care!**

* A fantastic new **stock photo market consulting service** is available to help you turn your pictures into money!

* You can sign up for a world-wide **Free-lance Registry**.

* An opportunity to be published in **APIdea Newsletter**.

* "All-risk" photo equipment insurance

* Classy decal and membership card will **open doors for you!**

* Special hot market bulletins, pricing guides — and lots more to increase your skills, your confidence and inspire you to **start making money RIGHT NOW ... at no risk!**

FREE "Making It In Glamour Photography" for a limited time you will receive this 22 page handbook ... all aspects — from lining up models to perfecting your own style.



2 MONTHS FREE

If you are not satisfied after 2 months you get **full refund**. You can even post-date your check and we'll return it uncashed if you cancel! With no risk, your best bet is the 3 year special.

NO RISK / LIMITED TIME OFFER

Associated Photographers International PG14
9426 Santa Monica Bl.
Beverly Hills, CA 90201

Enter my membership for:

☐ 1 Year plus 2 Months FREE*—\$12.50

☐ 3 Years plus 2 Months FREE*—\$25.00

(Add \$3.50 or \$5.00 for foreign countries except Canada.)

*with the understanding that I can cancel within two months and get a full refund. **PRINT**

NAME.....

Address.....

City/State/Zip.....

Associated Photographers International

color printing, part IV

newsletters prepared by their chief chemist, Dr. Robert Chapman, which were originally intended for use by Unicolor field representatives. The subjects are varied, and the level of information ranges from practical charts and common sense to detailed technical essays. To receive a set of these newsletters, address your request to Unicolor, 7200 Huron River Drive, Dexter, Michigan 48130; include \$1 for postage and handling.

SPECIAL PRINTING TECHNIQUES

There's always room for yellow, blue or red. In fact, once you've made good color prints from your color negatives, you'll probably want to make color prints from your *black-and-white* negatives as well. Why not? You won't get a full range of colors in a color print made from a black-and-white negative, but you will get colorful monochromatic images. Two of the accompanying photos illustrate the results of this technique. In fact, with the right choice of negatives and appropriate filtration the effect can be really dramatic.

If you want to give this technique a try, remember that the color you see in the final print will always be complementary to the color of light that made the exposure in the enlarger. Cyan filtration in the enlarger, therefore, will produce a *red* print. Altering the filtration will alter the color, and changing the exposure will lighten or darken the print. That's really all you need to know in order to start making color prints from your black-and-white negatives. Once exposed, the print is processed as a color print. Changes in exposure or filtration should be bold changes, since this effect does not respond quickly to subtle changes in either exposure or filtration. If you run out of available filtration in any color or if you want to try some even more dramatic changes, use colored cellophane purchased from your local art supply or variety store. If you have variable-contrast filters normally used for black-and-white printing, you might try them as well.

To obtain a greater degree of control with this process, it is possible to sandwich your black-and-white negative with a blank piece of processed color negative film. In effect, you are then borrowing the "orange mask" from the color negative material and combining it with the image from the black-and-white negative. With a normal starting filter pack in your enlarger make a print with your Duocube or other subtractive calculator. This will locate a neutral gray patch; then you can alter the filtration from this neutral point to suit your taste.

Texture screens have long been used by black-and-white printers to add interest to prints or to hide scratches or other defects in negatives. As the accompanying photographs illustrate, commercially available or homemade texture screens can be used successfully with color negatives as well. If you use the large texture screens that get placed directly on the paper, instead of those that get sandwiched with the negative, then you have an additional control when printing color. The separate texture screen exposure given to the paper can utilize a different filtration than the exposure made from the negative. This will alter the color and density of the texture pattern.

Along these lines, try making photographs with color printing paper and colorful translucent objects. Add to this technique some changes in filtration for the various exposures, and you have a lot of color on your hands. Dodging or burning-in with appropriate pieces of filter material instead of conventional tools can bring about striking local areas of color control—an effect that's virtually impossible to produce any other way. Finally, placing a color transparency in your enlarger and printing it in this negative-positive system will produce a negative print from the slide. Not only is the negative image powerful, but the complementary colors reproduced can be very exciting. Of course, here too, changes in filtration will produce dramatic visual effects.

Now, armed with all of the information given in this four-part series, there is no logical reason why you should deny yourself the pleasure to be experienced from printing your own color negatives. It's easy, fun and rewarding. Just look over the information given, select those components that seem to suit your needs and budget, and you can be printing color in your own dark-room tonight. □

Technical Index Data Sheet

By Parry C. Yob

D-76 OR ID-11 FOR KODAK AND ILFORD FILMS

If there is a truly universal developer for continuous-tone films, that developer has to be D-76 or ID-11. Now D-76 and ID-11 are exactly the same thing. Kodak calls it D-76, and Ilford calls it ID-11, and down through the years since photographers first switched from the use of iron salts to organic chemicals as reducing agents, this formulation has had a lot of other designations as well as minor variations to satisfy some individual or corporate ego. The formulation incorporates Metol (Elon) as a mild, soft-working developing agent in combination with hydroquinone, which adds both contrast and tonal range to the processed negative. The hydroquinone by itself is not an effective developing agent for continuous-tone materials because it requires high concentrations of alkali for activation, but Metol possesses the almost unique property of being a synergistic activating agent for the substance hydroquinone.

The Metol in D-76 activates the hydroquinone to such a degree that only the very mild alkali, borax, is needed. The sodium sulfite serves as a preservative, a keeper, and to some degree as an activator for the Metol. Thus D-76 or ID-11 has an almost indefinite shelf life if kept in tightly closed bottles and can be replenished over very long periods of time and for huge quantities of film. In my darkroom, a single gallon of D-76, with replenishment, is usually kept from one to three years, and about once a year it becomes necessary to filter out the silver sludge which falls to the bottom of the bottle.

Whether you purchase D-76 in packaged form or make it up from bulk chemicals, you can get

slightly finer grain and more consistent results if you use the *sweetening technique*. This consists of saving your old developer, and when making up a fresh gallon, substituting four ounces of used developer for four ounces of fresh developer. Simply pour out four ounces of fresh developer from the new gallon and save it for makeup material in place of spills. Then add four ounces of used developer to the fresh gallon and let it stand overnight before use.

If you make up the solution from bulk chemicals, you will find that adding *not more than* 10 percent of the sodium sulfite to the water before addition of the Metol will drive the oxygen out of the water and further improve keeping qualities.

A number of so-called additives have been suggested or marketed for use with D-76, and one or two are still being offered, but I do not recommend their use in any case. If you need finer grain than D-76 will give with an ASA 400 speed film and must retain the high emulsion speed, it is both more economical and more reliable to switch to a fine grain developer such as Kodak Microdol-X or D-25 and use an ASA 400 film. Using a fine grain film in combination with an *additive* to raise the ASA rating from 50 to 400 will not result in any finer grain, but it will add about \$2 a gallon to the cost of the developer and can give you some very muddy negatives.

In the tables that follow you may notice some deviations from manufacturer's recommended development times and ASA ratings. This results from tests which indicate that better negatives are obtained with times recommended earlier or with changes based on experience.

FORMULARY

D-76 and ID-11 Developer

	1 Liter	4 Liters*	5 Liters**
Water (125°F.).....	750ml.....	3000ml.....	3750ml.....
Metol (Elon).....	2g.....	8g.....	10g.....
Sodium sulfite (dessicated).....	100g.....	400g.....	500g.....
Hydroquinone.....	5g.....	20g.....	25g.....
Borax†.....	2g.....	8g.....	10g.....
Cold water to make.....	1000ml.....	4000ml.....	5000ml.....

* 4 liters equals just over 1 gallon.

** 5 liters is a convenient amount to make since this provides an extra liter (quart) of developer to

make up for spills when the same gallon is used for long periods with replenishment.

† Ordinary 20 Mule Team Borax (not Borateem) may be used.

D-76 and ID-11 Replenisher (1 Liter)††

Water (125°F.).....	750ml.....
Metol (Elon).....	3g.....
Sodium sulfite (dessicated).....	100g.....
Hydroquinone.....	7.5g.....
Borax†.....	20g.....
Water to make.....	1000ml.....

†† Add ¾ ounce of replenisher for every 80-square inches of film processed.

Technical Index Data Sheet

DEVELOPMENT TIME AT 70°F. IN FRESH OR REPLENISHED D-76 (ID-11)

(1) Special Test Group

FILM	ASA	TIME MINUTES	ROLL TYPE
Kodak Super XX	200	10½ (Tank)‡	Sheet Film
Kodak 2475‡‡	1000	12	35mm
Kodak Royal-X‡‡	1200	13	120

(2) Ilford Roll Films

FILM	ASA	TIME MINUTES	ROLL TYPE
Pan F	50	5½	35 & 120
FP4	125	6	35 & 120
HP4	400	7	35 & 120

(3) Kodak Roll Films

FILM	ASA	TIME MINUTES	ROLL TYPE
Pan-X	32	4½	35 & 120
Plus-X	125	5	35mm
Plus-X Pro	125	5	120 & 220
Plus-X Pro	125	4½ (Tray)	Film Pack
Plus-X Pro	125	6 (Tank)	Film Pack
Tri-X	400	7½	35,120&126
Tri-X Pro	500	7½	120 & 220
Tri-X Pro	320	6½ (Tray)	Film Pack
Tri-X Pro	320	8½ (Tank)	Film Pack
Verichrome Pan	125	5½	126 to 116
H.S. Infrared (daylight)	50§§	11	35mm

(4) Sheet Films

FILM	ASA	TIME MINUTES
Ektapan 4162	100	7 (Tray) 9 (Tank)
Plus-X 4147	125	5½ (Tray) 7½ (Tank)
Royal Pan 4141	400	7½ (Tray) 9½ (Tank)
Tri-X Pro 4164	320	6½ (Tray) 8½ (Tank)
Tri-X Ortho 4163§ (daylight)	320	6½ (Tray) 8½ (Tank)
Super Pan Press (B) 6146	250	9½ (Tray) 12 (Tank)
H.S. Infrared 4143§ (daylight)	50§§	7½ (Tray)

Notes for Undiluted Developer Processing

‡ Failure to agitate every 30 seconds and with gusto will result in bromide drag and streaking of negatives.

‡‡ These films require fixing times of up to 20 minutes and take 7 to 10 minutes to clear. Failure to fix properly will give false (high) ASA values and muddy negatives.

§ This film is particularly subject to mottle, bromide drag, etc., and is best developed in a tray, one sheet at a time.

§§ Daylight settings for handheld meters with No. 25 red filter over lens. No additional filter factor is needed, but wide bracketing is necessary since infrared radiation varies with time of day, temperature and subject matter and is not directly related to visible light.

DEVELOPMENT TIME AT 70°F. IN D-76 (ID-11) DILUTED 1:1

(5) Ilford Roll Films

FILM	ASA	TIME MINUTES	ROLL TYPE
Pan F	50	6½	35 & 120
FP4	125	6¾	35 & 120
HP4	400	10	35 & 120

(6) Kodak Roll Films

FILM	ASA	TIME MINUTES	ROLL TYPE
Pan-X	32	6½	35 & 120
Plus-X	125	6½	35mm
Plus-X Pro	125	6½	120 & 220
Tri-X	400	9½	35,120&126
Tri-X Pro	320	9½	120 & 220
Verichrome Pan	125	8	126 to 616

Note: Tank development times are based on continuous agitation for the first 45 seconds, including pouring time, then 15 seconds rest, followed by five seconds agitation every 30 seconds for the remainder of development time.

Tray development times are based on continuous agitation of sheet films by shuffling through the pack once per minute and rocking the tray continuously between times. Sheet film is prewet in a tray of water, then transferred, one sheet at a time, to the developer tray with the timer started when the first sheet is transferred. Sheets are kept in order and removed in order, one at a time, starting when the timer bell rings.

Please order by number and send check or money order. Add \$2.00 to total amount of any order to cover shipping handling & guaranteed delivery charges via surface carrier to 50 states. BankAmericard and Master Charge accepted.

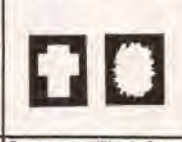
Portertown® Stone Mountain
Photo Case size 17 5/8"x13x5 1/2"
Extra heavy construction with
tongue & groove closure. 2 lock-
ing latches, wheely, rimped handle,
shoulder strap and filled with
poly foam. Cut with knife incl.
A08 0043 Stone Mountain
Photo Case \$06 50



Portertown Photographer Patch	
Gold colored thread on black fabric on Wadswale Size 1 1/2x4"	
A14-0013 Sports	
Photographer Patch	\$1.49
A14-0011 Nature	\$1.49
A14-0042 Glamour	\$1.73
A14-0012 School	\$1.49



Portertown: Pictorial/Wedding Effects 8x10 negative vignette	
Masks: Lay on top of enlarging paper during exposing for drama	
A59-0089 Graduation	\$5.95
A59-0092 Cross	\$5.95
A59-0093 Heart	\$5.95
A59-0094 Sun Burst	\$5.95
A59-0095 Sheet Music	\$5.95



A55-0118 Global Goose	
Slide Pages, Pl/25	\$3.69
A55-0149 Global Goose	
Slide Pages, Pl/100	\$13.29



30 snap-off blades. Super sharp! These blades are excellent for fine, detailed work—cut, trim, scrape, clean, touch-up, etc. When Blade becomes dull, simply snap off a fresh one. Neat!

A29-0051 Art Knife with Holder & 30 Blades \$5.50



easy to use-enlarging (in contact)
great scale offers quick & simple
method of determining correct
exposure time in B&W printing
Test strip has 8 density wedge
with proper time clearly marked.
A22-0443 Enlarging
Exposure Scale \$2.25



Another practical application for your photo hobby. Simply trim slide to fit emulsion section & snap it on to viewer. Put it to your eye to see bright, clear image. Assorted colors.

A52-0032 Key Chain
Viewers Set of 5 \$2.95



toGraphic / April 1976 8

Photographic's SPEC SHEET

LENS: 135mm f/2.3 Vivitar Series 1



ANGLE OF VIEW: 18°
NUMBER OF ELEMENTS: 6 elements in 6 groups
ACCESSORY SIZE: 72mm
APERTURE RANGE: f/2.3 to f/22
FOCUSING RANGE: 3 feet to infinity (.9 meters to infinity)
CLOSE FOCUS MAGNIFICATION: 1:4.5
DEPTH-OF-FIELD SCALE: For f/8, f/11 and f/16 only
INFRARED FOCUS MARK: Yes
LENS COATING: Magnesium fluoride
WEIGHT: 22 oz. (624g)
FINISH: Black anodized
LENGTH FROM FRONT TO FLANGE, AT INFINITY: 3 3/5 inches (91.4mm)
MAXIMUM BARREL DIAMETER: 3 1/8 inches (79.4mm)
CLICK STOPS: Full and half-stop detents
ROTATION DIRECTION FROM INFINITY TO CLOSE-UP, IN USE: Clockwise
BUILT-IN LENS HOOD: Yes
SPECIAL FEATURES: Rubber diamond-knurled focusing ring
MOUNTS AVAILABLE: Universal, Canon FL/FD, Nikon, Minolta SR-T, Konica Autoreflex, Olympus OM
PRICE: \$219.50, list (with front and rear caps, no case)
DISTRIBUTOR: Ponder & Best, Inc., 1630 Stewart Street, Santa Monica, California 90406

LENS: 70-210mm f/3.5 macro focusing Vivitar Series 1



ANGLE OF VIEW: Min. 11°, max. 32°
NUMBER OF ELEMENTS: 15 elements in 10 groups
ACCESSORY SIZE: 67mm
APERTURE RANGE: f/3.5 to f/22
FOCUSING RANGE: 7 feet (2 meters) to infinity in normal mode, 11 1/2 inches (292mm) in macro/close mode
CLOSE FOCUS MAGNIFICATION: 1:2.2
DEPTH-OF-FIELD SCALE: None
INFRARED FOCUS MARK: Yes
LENS COATING: Multicoated
WEIGHT: 31 oz. (879g)
FINISH: Black anodized
LENGTH FROM FRONT TO FLANGE AT INFINITY: Min. 6 1/8 inches (156mm), max. 6 3/4 inches (171mm)
MAXIMUM BARREL DIAMETER: 3 1/16 inches (78mm)
CLICK STOPS: Full and half-stop detents
ROTATION DIRECTION FROM INFINITY TO CLOSE-UP, IN USE: Clockwise
BUILT-IN LENS HOOD: None
SPECIAL FEATURES: Zoom lens with macro-focusing capability, rubber diamond-knurled focusing ring, One-touch focus/zoom ring
MOUNTS AVAILABLE: Universal, Canon FL/FD, Nikon, Minolta SR-T, Konica Autoreflex, Olympus OM
PRICE: \$469.50 list (with slip-on lens cap and rear cap, no case. Rubber collapsible lens hood available for \$10)
DISTRIBUTOR: Ponder & Best, Inc., 1630 Stewart Street, Santa Monica, California 90406

LENS: 35-85mm f/2.8 Vivitar Series 1



ANGLE OF VIEW: Min. 63°, max. 28°
NUMBER OF ELEMENTS: 12 elements in 9 groups
ACCESSORY SIZE: 72mm
APERTURE RANGE: f/2.8 to f/16
FOCUSING RANGE: 1 1/5 feet (.3 meters) to infinity, 10 1/5 inches (259mm) at 35mm setting
CLOSE FOCUS MAGNIFICATION: 1:3.5
DEPTH-OF-FIELD SCALE: None
INFRARED FOCUS MARK: None
LENS COATING: Multicoated
WEIGHT: 27 oz. (766g)
FINISH: Black anodized
LENGTH FROM FRONT TO FLANGE, AT INFINITY: Max. 4 1/10 inches (104mm), min. 3 3/5 inches (91mm)
MAXIMUM BARREL DIAMETER: 3 1/5 inches (81mm)
CLICK STOPS: Full and half-stop detents
ROTATION DIRECTION FROM INFINITY TO CLOSE-UP, IN USE: Clockwise
BUILT-IN LENS HOOD: None
SPECIAL FEATURES: Varifocal lens, rubber diamond-knurled focusing grip, One-touch focus/zoom ring
MOUNTS AVAILABLE: Universal, Canon FL/FD, Nikon, Minolta SR-T, Konica Autoreflex, Olympus OM
PRICE: \$499.50, list (with slip-on lens hood, front and rear lens caps, no case)
DISTRIBUTOR: Ponder & Best, Inc., 1630 Stewart Street, Santa Monica, California 90406

BLUEPRINT SERIES

How To Construct a Location North Light

BY WALT SENG

PROJECT: To construct a light source similar in effect to a studio north light to be used on location.

PURPOSE: To provide a quality light source without the hassle of lugging a gigantic piece of equipment around airport terminals and hotel lobbies.

MATERIALS: 1. Artists' matte acetate (or a similar diffusion material); 2. Small roll of aluminum foil; 3. Roll of gaffers' tape; 4. Black paper such as construction paper or a piece of black seamless; 5. Suitable cardboard box (often found on location); 6. Scissors or sharp knife; 7. Jaw-type clamps (2); 8. Approximately 18 inches of wire; 9. Light source such as a photoflood lamp, quartz light or portable strobe.

ASSEMBLY GUIDE: The beauty of this light source is that you carry only a few portable items with you—things that you would carry normally in your travel kit. The cardboard box is available at shooting site. The box should have flaps on one end. I suggest a minimum size of roughly two feet by three feet, about two feet deep. Ultimately, the size of the box will be determined by the subject photographed.

CONSTRUCTION: After locating a cardboard box of the appropriate dimensions, prepare it for construction by removing the flaps from one end (see photo No. 1). Then cut out a section from the long side of the box (see photo No. 2). This will be the rear of the lamp and will permit easy access for your photoflood or other light sources.

Next cut the diffusion material to the dimensions of the



opening of the box. Place gaffer's tape along the edges of the material, allowing half its width to extend over the

edges (see photo No. 3). Tape the diffuser to the inside of the box just below the flaps (see photo No. 4).

Now line the interior of the box with aluminum foil. Crinkle the foil before installing (see photo No. 5). This will prevent possible hot spots of light which could result in uneven illumination. The foil permits maximum light to fall on the subject, but more importantly, it prevents the brown color of the box from throwing off color balance.

Take the black paper and cut it to the size of the flaps. With strips of gaffer's tape, affix the paper to the inside of the flaps (see photo No. 6). The box flaps are used to contour the light spilling on the background, as in photo No. 10, and shield direct light from the camera lens.

Next position the clamps on the box. The exact position will be determined by the angle you wish to obtain. Run a piece of wire through or around the handles of the clamps (see photo No. 7). The box can be suspended from a crossbeam supported by two lightstands, or it can be hung from a ceiling joist, suspended ceiling track, etc. (see photo No. 8).

Following this, position your light source through the port at the rear of the box (see photo No. 9). Plug in the light, position box, trim the flaps, and you're ready to shoot.

GENERAL DISCUSSION: A north light is a large lamp providing diffused, semidirect light approximating light that might enter a large window facing north. It is a standard device used in most professional studios.

The box described here works just like the real thing. I've used it on a number of jobs and have found it a flexible tool and have applied it to various uses. It can be clamped to a light stand and used from the side to produce ideal portrait light. It can be used as a rear light for photographing glassware. If used overhead, it can be snouted to produce a soft spotlight effect. You will find many uses for your "cheap light" or the "Ugly Duckling," as one art director called it. □

© Walt Seng, 1976



1



2



3



4



5



6



7



8



9



10

ALL PHOTOS BY THE AUTHOR

THE PHOTOGRAPHIC BINDER



The perfect way to save and store your valuable issues of PHOTOGRAPHIC Magazines in a permanent reference volume.

- Attractive and Durable
Made of tough, simulated leather with embossed gold title on binder cover and spine.
- Solution to Magazine Storage
Organizes and securely holds 12 issues of PHOTOGRAPHIC—neat, clean and easy to find.
- So economical you'll want several for your collection!

ONLY \$5.00* each

*price effective thru June 1976
(plus \$1.00 postage & handling)

SAVE 10-20%

3 for \$13.50 or 6 for \$24.00

For each additional order add 25¢ per binder for postage & handling

PETERSEN LIBRARY BINDERS

6725 Sunset Blvd., Los Angeles, CA 90028
Send me _____ PHOTOGRAPHIC Library Binders @ \$5.00 ea; 3 for \$13.50; 6 for \$24.00 (postage and handling charges—1 binder \$1.00. Each additional order add 25¢ per binder. CALIF. residents add 6% sales tax). My check or Money Order for \$_____ is enclosed.

TO AVOID DELAY—PRINT CLEARLY

Name _____

Street _____

City _____

State _____ ZIP _____

Allow 4-6 weeks for delivery. 476PH

WEDDING PHOTOGRAPHERS!

Handbook of tips! Things you should know about photography. The professional's tricks for making the most money with the least trouble. Exposures your competitor won't divulge. Mixed with a little common sense. \$1.00. Studio WA, 6713 Wildwood, Westland, Michigan 48185.

FOR THE SMOOTHEST PRINTS . . .

that can be made from 35mm equipment, use H & W films. These Very Thin Emulsion films match the recording ability of good lenses. And the 4.5 developer gives full tonal range.

**H & W Control VTE Pan (EI 50)
and Ultra (EI 16) Films**

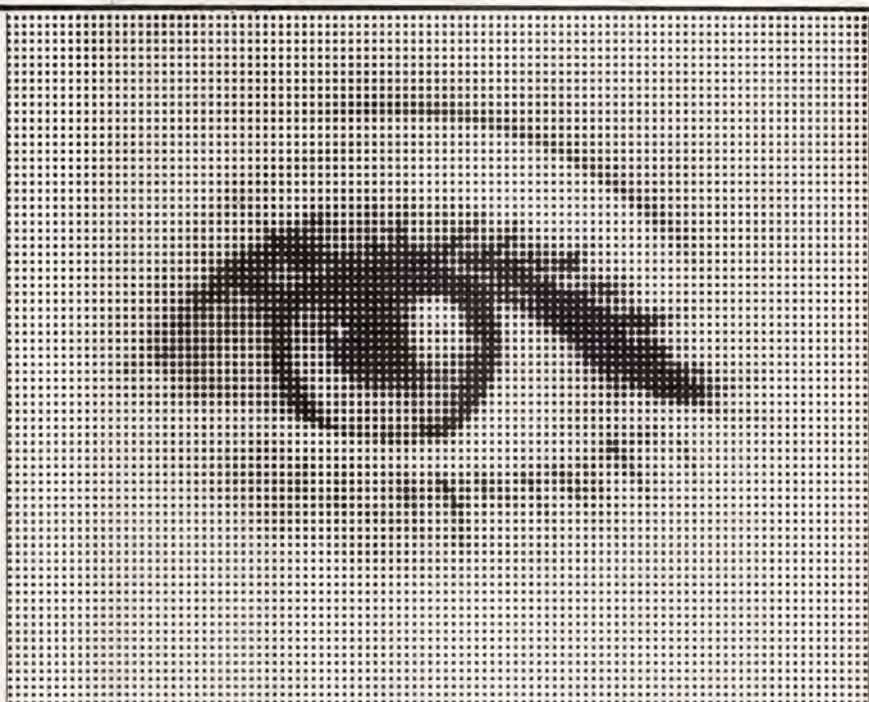
H & W Control 4.5 Developer Concentrate

For low-light and action situations, H & W Maximal Developer/Replenisher gives standard b & w films the highest speed consistent with minimum increase in graininess.

H & W Maximal Developer/Replenisher

At your Dealer. If he can't supply you, we'll be glad to. Just write for Tech Sheets, product list and prices.

The H & W Company, Box 332, St. Johnsbury, VT 05819



BLOW IT UP!

BUT DON'T BLOW IT! You want to express your special mood, special emphasis, special effect. You want to use the techniques that make photography a communicative art. PHOTOGRAPHIC can help. The first "how-to" monthly that not only shows portfolio techniques but thoroughly explains their secrets to you. Now you can follow step-by-step procedures to blow up your prints, for example, without blowing it. Or how about darkroom effects, close-up stylization or skillful color montages? Whatever the amateur as well as advanced still-and-motion picture enthusiast wants to and needs to know. You'll find it's all revealed in PHOTOGRAPHIC. And always revealed in detail so you can try it yourself.

Subscribe now, 1 year for only \$9.00.

PHOTOGRAPHIC Magazine

6725 Sunset Blvd., P.O. Box 3414
Los Angeles, CA 90028

Please ☐ enter or ☐ extend my subscription to PHOTOGRAPHIC for 1 year for only \$9*.
☐ My payment is enclosed. ☐ Bill me (U.S. only).

Name _____

Address _____

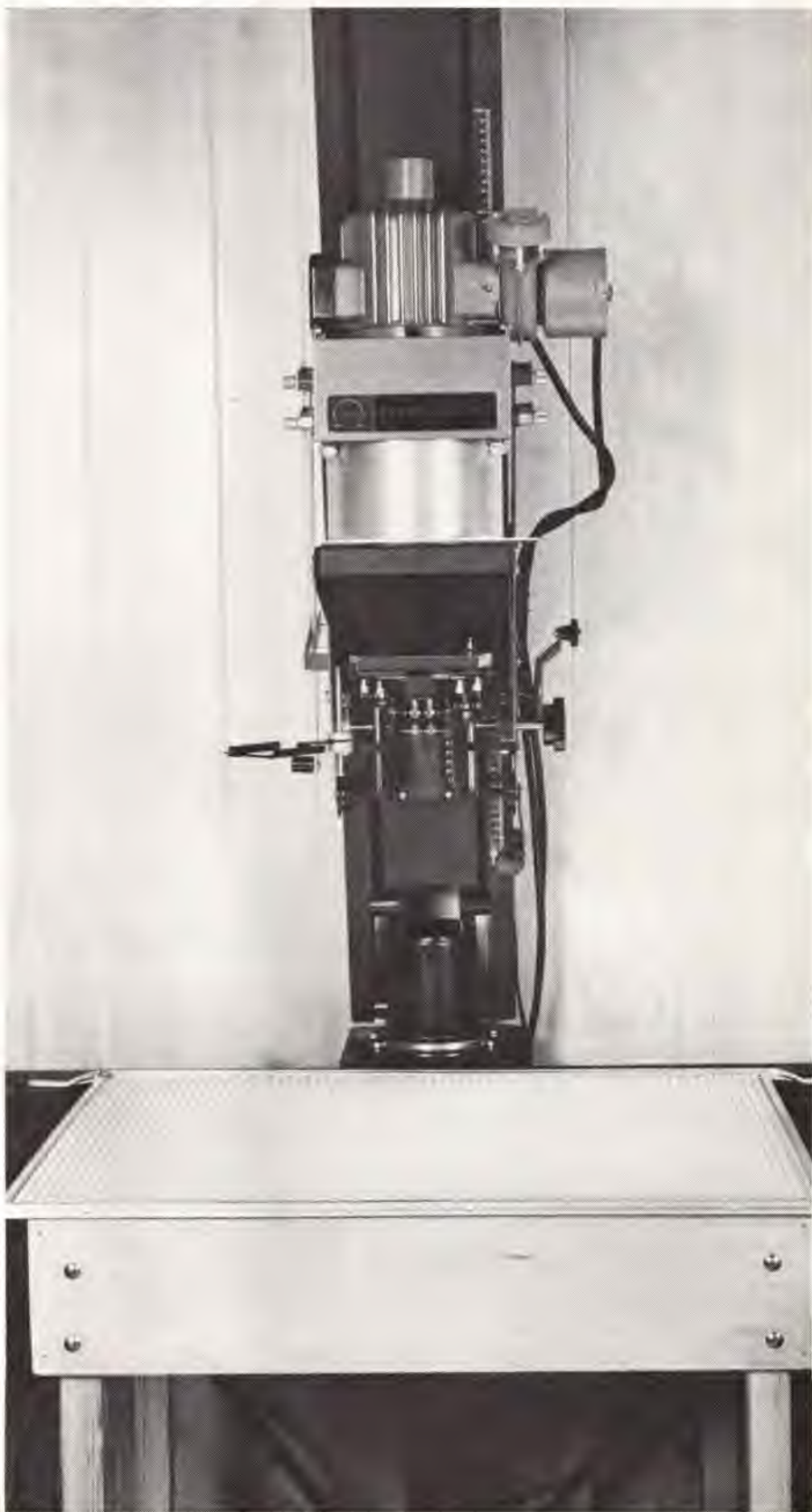
City _____ State _____ ZIP _____

*U.S., Territories & Military only. Other countries add \$1 for postage. Offer expires June 30, 1976. (Please allow us up to 60 days to get the first copy of a new order into the mail. Watch for it!)

PMH4P

darkroom lighting

PART



build A MULTIPLE-USE light TABLE

by PARRY C. YOB



2



3



4

1. An easily movable light table is a darkroom essential. Here it is used as a light source, while the enlarger is used as a camera for making texture screens. An expanded metal grille is used to provide the pattern for screen, and litho film is placed in negative carrier. Exposure is controlled by a sheet of cardboard placed over grille before lights are turned on in table. The high quality flat-field enlarging lenses are ideal for this type of photography, and focusing is done by focusing a negative on a piece of paper placed on tabletop prior to placing film in negative carrier.

2. Complete light table ready for use.

3. Begin construction by nailing sides to ends of 1x6 lumber ring to form light box.

4. Small finishing nails which hold stripping are best installed with a nail pusher shown here. Note strip position.

Several months ago I visited the darkroom of one of the world's most famous photographers, and somehow everything seemed a little brighter there. In fact it seemed so much brighter that I eventually purchased a \$60 safelight just to duplicate his setup. However, the luminescence must have been the aura of his magnificent personality, because once that fancy safelight was installed, it did not give off as much illumination as my homemade rig. Since then I've visited the darkrooms of a well-known photography school where things are so dark that it takes my eyes 10 minutes to adjust to the illumination of the feeble safelights. But in neither of these instances did I notice what I consider to be an essential part of darkroom lighting. To me, a light table or light box is as necessary as an enlarger or a safelight and is an integral part of the system which allows me to work rapidly, even with others using the same darkroom space.

Strong, bright safelights, together with a good white light over the hypo tray make up the remainder of what is required to make any darkroom efficient. If you always work alone in the darkroom, an ordinary white light will do for viewing prints in the hypo, but if you share a second enlarger or work a team system for production printing, you'll need a shielded viewing light and a variable power safelight, which will be described in Part II, but first let's talk about the light table.

Every negative and transparency I make travels over my light table at least once, even if it is on the way to the trash can, and most return to the light table time and again. Wet negatives are given a quick look as they are hung up to dry, and dry negatives go to the light table for numbering as they are taken down. The same table serves for spotting negatives and transparencies, sorting transparencies, slide binding, laying out slide shows, working paper negatives, and most of all, I use it to check negatives as they go into the carrier for enlargement. The light table is always beside my enlarger during a printing session where it speeds selection of the proper negatives, plac-

ing them in the carrier in the proper direction and checking for dust or lint spots. In fact, for the last six years, I've been fighting the same old light box, making modifications and gadgets until I could build a table which would eliminate all the old faults without generating any new ones.

Since a lot of readers are dedicated to doing things for themselves, I should point out the principal faults of most home-built (and a lot of commercial) light boxes. The first fault is heat. Most boxes warm the working surface well above room temperature and cause negatives and transparencies to pop and buckle. Incandescent bulbs not only generate this heat, but it is difficult to space them in a shallow box and still get even lighting. In addition to heat there is the problem of light color. Transparencies viewed by ordinary incandescent light take on a warm color which can be very deceptive when you want to make "R" prints or Cibachromes. Finally, most light boxes offer no provision for light reduction or any way of using them while there is another worker in the darkroom.

I use a team system in my darkroom when there are a lot of prints to be made. One person runs the enlarger, and the other handles the wet side. This means the light table must not throw actinic light into the developer or stop bath, and the print viewing light over the hypo tray can be turned on without fogging paper on the enlarger easel. At times two enlargers are used with both workers sharing both the light table and the sink, and it is convenient to have the table easily movable to the best location.

BUILDING THE TABLE

Construction begins with cutting the two 1x6 side pieces 26 $\frac{3}{4}$ inches long. This length is based on the light fixtures having a length of 24 inches, and you should measure your assembled fixture before cutting the side pieces. If your fixtures are 24 inches or less in length, cut the pieces 26 $\frac{3}{4}$ inches long. If the fixtures are longer than 24 inches, you will have to add the excess to the length of the side pieces. For instance, if your fixture turns out to be 24 $\frac{1}{4}$ inches long, the excess is $\frac{1}{4}$ inch.

DARKROOM LIGHTING

You would add $\frac{1}{4}$ to $26\frac{3}{4}$ to get 27 inches for the sides.

Note: only nominal dimensions will be given for the light tabletop, and because of the possible differences in length which the fixtures create, the top should not be purchased until the *entire* table construction is completed and actual measurements can be accurately made.

The 1x6 end pieces are next cut 18 inches in length and placed between the two side pieces for nailing. This will give you a wooden rectangular ring, roughly 18x25 inches in inside dimensions. Nail the pieces in place, using only two nails at each corner. Use finishing nails, placing them about an inch in from the edges of the side boards. Although this nailing should be done neatly, it should be limited to two nails because the legs, which will be bolted in place later, give the supporting strength to the construction.

Cut two pieces of $\frac{1}{2}$ x $\frac{3}{4}$ -inch wood strip to the exact length of the inside of the ring and nail one strip to each of the sides along what will be the top of the ring. The upper edge of the strip should be placed $\frac{1}{8}$ inch below the upper edge of the 1x6 board. Now cut two more $\frac{1}{2}$ x $\frac{3}{4}$ -inch strips the exact length to go between the first two strips and nail them to the end pieces so that they too are $\frac{1}{8}$ inch below the top. Together they form a concentric ring within the larger boards. Your glass or plastic top will rest on this ring, so it is essential that the top edges of the strips all line up properly.

Now cut four 28-inch legs from 2x2 clear pine. In the exact center of one end of each leg, drill a suitable size hole for the caster socket. The casters used here took a $\frac{3}{8}$ -inch hole, and a doweling jig was used, as shown in the photograph, to locate the hole and keep it straight in the leg. Be sure to drill this hole deep enough for the socket and caster stem, allowing about $\frac{1}{4}$ inch more for clearance. Remove the caster from the socket and drive the socket into the hole so that the metal teeth are forced into the end of the leg.

Now cut the two 2x2 braces 15 inches long and drill $\frac{3}{8}$ -inch holes in the exact centers of the ends of the braces—four holes in all. Use a doweling jig to locate the holes if you have one. These holes should be about 1 $\frac{1}{4}$ inches deep.

Now drill a dowel hole in each of the



1



2



3

1. Doweling jig properly positioned for drilling centered holes in ends of 2x2 legs for casters and crosspieces for dowels.

2. Caster socket properly installed in bottom of 2x2-inch leg.

3. $\frac{3}{8}$ -inch dowel in center of 2x2 brace. Note that sharp corners have been removed from dowel end for easy entry into hole in leg.

legs, with the hole center five inches from the end of the leg in which the caster socket is mounted. This hole should be centered in the leg, and if possible, a doweling jig should be used to make the hole perpendicular to the side of the leg. These holes should also be 1 $\frac{1}{4}$ inches deep.

Before attempting to assemble the legs with the cross brace, cut an additional piece of wood 15 inches long. Any scrap of two-inch lumber will do as long as its ends are cut square.



4



5



6

ALL PHOTOS BY THE AUTHOR.

4. Furniture clamps (gluing clamps) hold legs and brace together while glue sets. Note spacer piece between legs at upper clamps to keep legs parallel.

5. Alternate clamping method if you don't have gluing clamps. Twisted rope provides tension, while wood scrap keeps twister from spinning loose. Note that a spacer still holds upper ends of legs apart and parallel during gluing.

6. Proper method of using carriage bolts to hold leg in place. Bolt holes must not run into each other. Note that top of leg is butted against strip.

Next cut four pieces of $\frac{3}{8}$ -inch doweling, each of which is two inches long. Sand or file the ends of the dowel to form a slight bevel on the corner; coat the mouth of the hole in the brace with white glue and drive the dowel into the hole. With a dowel in each end of the brace, coat the ends of the brace with white glue and push the protruding end of a dowel into each of

two legs. Then clamp the legs to the brace, using one of the methods shown in the photos. Be sure to place the 15-inch scrap between the loose ends of the legs as a spacer so that the legs will remain parallel while clamped for gluing. Allow the glue to set for several hours before releasing the clamps.

Use a "C" clamp to hold the top end of a leg against the end board of the box, making sure that the end of the leg is firmly butted up against the bottom of the strip which is already nailed along the upper edge of the box. This places about 4½ inches of the leg inside the box. Now drill a ¼-inch hole through the side board so that it goes through the center of the leg near the upper end. Place a carriage bolt through the hole from the outside; put a washer next to the leg and use a nut and wrench to tighten the bolt firmly. Drill a second bolt hole through the side board near the lower edge (about 1½ inches in) and install a second carriage bolt. Remove the "C" clamp and drill two carriage bolt holes in the end piece of the box, making sure that they are located so that the holes do not strike either the nails from the side board or the other carriage bolts. Now bolt the end piece to the leg as illustrated in the photographs. Repeat this drilling and bolting procedure at each of the three remaining corners.

Cut strips of ½x¾ wood to fit between the legs on both the sides and the ends and nail them in place so that their lower edges are ¼ inch in from the lower edges of the boards. You may have to use a knife or chisel to whittle the ends of the strips to fit under the bolts in some places.

Carefully measure the inside dimensions of the box (approximately 18x25 inches) and cut a piece of ¼-inch plywood to fit. Cut a 1½x1½-inch square out of each corner and cut a hole for the switch box as seen in the photo. A saber saw will do a neat job of cutting both the corner notches and the switch box hole, and the completed piece should be nailed into the bottom of the box against the stripping. Brads about ¾ inches long will hold the plywood in place, and these are best placed with a nail pusher of the type shown in the photo of strip nailing. However, before placing more than two brads, you should drop one of your light fixtures into place to make sure that it fits between the bottom strips which hold the plywood. If for some reason the fit is a little too tight, remove the plywood and

decopour®

Pour on Deep Gloss Plastic



The neatest, newest way to preserve a photo.



Just mix, pour & spread on plaques • in frames • on tables—moisture proof—shatter proof

Ask your Distributor Salesman for decopour or write us:



The Flecto Company, Inc.,
P. O. Box 12955,
Oakland, CA. 94604

Get the BIG picture

Show them on a Da-Lite screen

Little color prints don't compare with the big, bright picture you see when you project on a Da-Lite screen. Make your next pictures slides or movies and show them, lifelike and brilliant, on one of many sizes and styles of Da-Lite screens available. You'll wonder why you ever settled for less. See your fine photo dealer or write for free literature.



DA-LITE

Da-Lite Screen Co., Inc.
Warsaw, Indiana 46580

Slide and movie screens since 1909

EARN HUNDREDS OF DOLLARS MORE!

with the Super-sensitive
S & M A-3 Darkroom Meter,
The One Photo-Meter
That Does It All!!

TRY ONE—FREE FOR 10 Days.

Use your A-3 Meter with dial lights as darkroom PROS now do. It's easy to use at the enlarger with the ⅝ in. high EASEL probe to determine accurate exposures for B & W and COLOR photos, correct paper for prints, and even ft. candle measurements.



A-3 In Darkroom Action

Use your A-3 to eliminate waste of films and prints, chemicals and time, and to increase productivity and earnings by HUNDREDS OF DOLLARS.

Use your versatile battery-operated A-3 with the STANDARD probe as a LIGHT METER. Features? Four sensitivity ranges; EV-EVS-LV settings; ASA settings from 3 to 25,000; f/stops from 0.7 to 90; exposure times from 1/15,000 sec. to 8 hours.

Other special applications? Ground-glass, slide duplication, photomicrography, holography, and MORE!

You save hundreds of dollars when you make this inexpensive densitometer with the A-3 and easy-to-build Light Source.



A-3 In Ground-glass action



Uses Plug-in Probes

SCIENCE & MECHANICS
Instruments Division, Dept. 4P76
229 Park Ave. So., N.Y., N.Y. 10003
Attn: Wilfred M. Brown

Send the Meter with probe(s) indicated, exposure calculator, case, manual and instructions to build my own densitometer.

If not satisfied, I may return the Meter within 10 days for complete refund.

Darkroom Meter A-3 @ \$9.95 with one probe

Extra probes @ \$9.95 each

☐ ⅝ in. diameter Standard probe;

☐ ⅝ in. high Easel probe or

☐ ⅝ in. diameter Mini-probe or

☐ Special Densitometer probe

Check or money order enclosed. Add \$4.00 for each meter for shipping and handling. Company purchase orders accepted.

Name _____

Address _____

City _____

State _____ Zip _____

Complete Your

Photographic

Collection Today!

The following back issues are still available. Check the ones that you would like:

1974

☐ May
☐ Feb ☐ June ☐ Oct
☐ Mar ☐ July ☐ Nov
☐ Apr ☐ Aug ☐ Dec

1975

☐ Jan ☐ May ☐ Sept
☐ Feb ☐ June ☐ Oct
☐ Mar ☐ July ☐ Nov
☐ Apr ☐ Aug ☐ Dec

1976

☐ Jan ☐ May ☐ Sept
☐ Feb ☐ June ☐ Oct
☐ Mar ☐ July ☐ Nov
☐ Apr ☐ Aug ☐ Dec

NOTE: 1976 back issues may be ordered only after they have appeared on the newsstand.

Send \$2.00*

*Price effective thru June 1976

per copy along with your name and address to:

Some issues are in limited supply, so order NOW!

PETERSEN PUBLISHING COMPANY

Customer Service Dept.

6725 Sunset Blvd., Los Angeles, CA 90028

EXPERIENCE THE ULTIMATE WITH A...



SHUTTERPACK CASE

The SHUTTERPACK case is a fully padded, protective custom designed framed backpack for the serious amateur and professional photographer. The main bag has two sections, both having padded dividers for placement of cameras, lenses, lightmeters, flashes and other personal items. Two side pockets have been designed specially for your exposed and unexposed film. One lower pocket is divided into five sections for your filters, and the other is divided in half for cleaning materials and other attire. Your tripod fits snugly on the front, placed specially to prevent damage or contact with other equipment. The SHUTTERPACK case is made with the toughest, most durable material and is fully padded with 1/2 inch foam rubber. The pack is fully guaranteed. Write for your free catalog.

ULTIMATE EXPERIENCE

769 Chelham / P.O. Box 2118
Santa Barbara, Calif. 93120

DARKROOM LIGHTING

use a coarse file or a chisel to notch the strip so that the fixture will drop into place without using force. If you have suitable power tools, you can be very fancy about this notching, but a pocketknife can be used if the bottom is not in place to interfere with your whittling. When the fixtures fit, place three or four brads along each of the four edges of the plywood to hold the bottom in place.

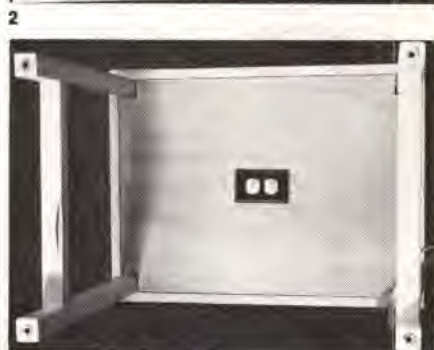
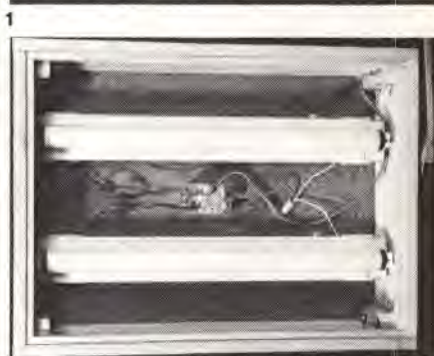
Install the box for the switch in the center hole of the plywood, and with the covers removed drop your fixtures into place. Locate suitable places for screws, remove the fixtures and drill 11/64-inch holes (through the metal) in these locations. Two holes per fixture will be adequate. No. 8 sheet metal screws, 3/8-inch long, are passed through these holes to hold the fixtures to the bottom of the box. Drill 1/16-inch holes through the plywood to accommodate the screws and place small washers under the screw heads so that the tips of the screws do not protrude through the plywood on the bottom side.

WIRING THE FIXTURES

Begin wiring by running a piece of No. 16 or 18 bare copper wire from one of the bolts of the transformer in each fixture to the switch box where it should be attached to the back of the box by means of a No. 10-32 screw, placed in the threaded hole provided in the box. If there is no place for a grounding screw on the switch box, attach the wire to any handy screw on the metal part of the box.

The green wire of your power cord should be attached to the same No. 10-32 screw to which the bare copper wire was fastened. The two white wires from the fixtures are brought out through any handy hole in the sides of the fixtures, and a solderless connector is used to fasten these two wires to the white wire of your power cord. Failure to connect the white and ground wires properly would not only be unsafe, but it can prevent the fluorescent tubes from starting properly.

Now take a good look at the binding screws on your double switch. You'll see that on one side of the switch are two binding screws on opposite ends of the unit, and on the other side there are two more screws which are side by side in the middle of the switch. Attach the black wire of your power cord to a binding screw at one end of the switch and attach a black wire from one of



3. Properly cut bottom piece for light table. Corners are cut away to fit around legs, and center hole is for switch box mounting.
2. Interior of completed light table. White paint or aluminum foil provides reflective surfaces, eliminating dark areas between tubes. Aluminum has been removed for photo clarity.
3. Bottom of light table with switch in place. Plywood panel is nailed to stripping around the inside of box. Casters are not yet in sockets of legs. Power cord has been brought out through notch between panel and leg.

the fixtures to the screw at the opposite end of the switch unit. Attach the remaining black wire from the other fixture to one of the two binding screws at the center of the switch, on the opposite side of the unit from the first two black wires.

The power from the black (hot) wire enters the first switch and passes through it to the first fixture. Thus, turning this switch off shuts off both fixtures. However, with this switch on the remaining switch can now be used to turn the second fixture on or off while leaving the first fixture on. This switch is very important, since it gives you the option of using either 20 or 40 watts of light in the box.

Attach the fixture covers, following the instructions that come with the fix-

tures, then install the light tubes, which are supplied with the fixtures, and test to see that the lights function properly. If they fail to work properly, chances are that you have not fastened the white wire from the power cord to the white wires from the fixtures.

INSTALLING THE TABLETOP

The tabletop can be made from 1/8-inch or thicker flashed opal glass or from 1/4-inch translucent opal Plexiglas (Lucite sheet). I chose Lucite sheet because the cost was about half that of the flashed opal glass, and the Lucite was far less fragile. The plastic is less resistant to scratches than is the glass, but polishing materials are available for removing scratches from the plastic, while nothing can salvage broken glass.

Carefully measure the inside of the top of the light box and take the exact measurements to your plastics supplier or glass shop and have the dealer cut the tabletop to these dimensions. Be sure your measurements are accurate and impress on the shopman that the top must *not* be cut oversize. If you have doubts as to the reliability of your measurements or the abilities of your supplier, take the actual table to him and tell him to cut the plastic or glass to fit the hole.

If you elect to use the more expensive glass, have the glass shop grind off the sharp edges from top and bottom on all four sides so that you will not cut your fingers when handling the glass. If you use plastic, this isn't much of a hazard, and you can use sandpaper to remove rough edges if necessary.

With the top in place and the lights turned on, you will find that the illumination is even enough for most purposes, but there are two bright bands above the tubes, and these must be evened out if you want to use the light table for shadowless photography or for lighting large transparencies for copying. Also, the color of the wood interior will influence the color of the light output. The latter is not important when working only with black-and-white materials, but when you install special tubes of the proper color balance for viewing, you want only the color they give.

To even out the light, you can either paint the interior of the box with a good white paint, or you can coat the entire inside of the box with aluminum foil. Being lazy, I chose the aluminum-foil method, placed loosely between the fixtures and between the fixtures and the walls of the box.

AUXILIARY EQUIPMENT

When using your light table for slide binding or when using it while working with a partner in the darkroom, you'll need two accessories. Both of these are light table covers and should be cut from 1/4-inch plywood, 18x27 inches in size. In the center of one of these covers cut a 2x2-inch hole and cement in a piece of 1/4-inch clear glass. This gives you a working table with only a small center bright spot, which is most convenient for slide binding.

About halfway between the ends of the second plywood piece and about four inches in from the edge, place one side of a 5x7-inch hole. One side of the hole will be four inches from the edge, and the other side will be nine inches from the edge. Into this hole, tape or glue a 5x7-inch OC safelight glass. This arrangement gives you a clean dry tabletop on which to place your negatives, envelopes, etc., and a bright, safe viewing light for cleaning negatives or loading carriers without fear of fogging another person's work in the sink or at a nearby enlarger. By turning off one of the tubes with the switch and placing the top so that the safelight glass is over the lighted tube, you'll still have ample light for judging negative contrast, reading frame numbers or any normal darkroom task.

If you have trouble with light leaking from beneath the plywood cover or around cracks in the bottom of the light table, simply seal the leaks with masking tape and go happily about your work. □

PARTS LIST

Two 20-watt fluorescent light fixtures (Sears Cat. No. HC34-8920)
Two F20T12/28 light tubes (Nulite Division Teplro Industries)
One 8-foot 1x6 clear straight pine board
Two 8-foot 1/2x1/4-inch clear pine strips
Two 8-foot 2x2-inch clear pine
One foot 3/4-inch doweling
Four casters (1 1/4-inch wheel), stem type for wood legs
Sixteen 1/4x2 1/2-inch carriage bolts
Sixteen 1/4-inch nuts
Sixteen 1/4-inch washers
One quarter sheet 1/4-inch AD plywood
Four 3/8-inch No. 8 sheet metal screws
Four flat washers to fit sheet metal screws
One three-wire grounded power cord with three-prong grounded plug
One switch (outlet) box
One double switch
One switch cover plate
One 2x2x1/4-inch clear glass
One 5x7-inch OC safelight
One 18x25-inch (see text for actual size) 1/4-inch opal Lucite panel

SOUP'N, PRINT'N & LIGHT'N

Everything you need to know about photography in simple graphic terms, easier to follow and understand than any book. Hang them in your darkroom. Satisfaction guaranteed.
SOUP'N Chemicals to suit your needs. Wise buying and easy mixing. Under-expose / over-develop, over-expose / under-develop (with examples). Salvaging bad negatives, grain control, solarizing, 10 rules for a perfect negative, and MORE!
PRINT'N Filters simplified (with examples). Eliminate the test strip. Good prints from bad negatives. Color toning, trying short-cuts, 10 rules for a perfect print, and MORE!
LIGHT'N How to light cars, pets, reflective surfaces. People (portraits & groups), rooms, stamps, night scenes. Trick lighting, 10 all-purpose lighting set-ups with a minimum of equipment, and MORE!



send orders to
George Foon
Graphic Design
7011 Sunset Blvd.
Hollywood, CA
90028

Posters:
22" x 36"
36" x 22" x 36"

1 poster - \$2.75, 2 posters - \$5, 3 posters - \$6

please rush: ☐ Soup'n ☐ Print'n ☐ Light'n

name _____

address _____

city _____

state _____

zip _____

enclosed is: _____

Calif. res. add 8% sales tax: _____

Add \$1 for container & postage: _____

\$ 1.00

Total enclosed: _____

NEW

STROBOFRAME™

DUAL GRIP FLASH BRACKET

- Dual grip system gives you superb comfort and steadiness
- Lower grip for your right hand allows you to focus with ease
- Simply rotate your camera for horizontal & vertical formats
- Overhead flash eliminates pink eye & disturbing side shadows
- Swivel reflector attachment gives you soft, diffuse lighting
- Bounce reflector attachment gives you soft, diffuse lighting
- Anodized aluminum. American walnut grips, cable release
- Stroboframe for 35mm SLR's \$39.95 • Reflector \$19.95 • Flash adapters: #243 for all shoe mount \$9.95 • #242 for all handle type \$7.95 • #241 for Honeywell handle type \$7.95 • Free brochure • 30-day money-back guarantee •

NOVACON PRODUCTS
1101 F 1 Victoria
Costa Mesa
92627
CA

**RELY
ON
YOUR**

**OWN TWO HANDS
for security**

Is the future going to catch YOU unprepared? Yesterday's ideas and skills are not enough.

We have trained people world-wide for successful careers as camera repair technicians. LET US HELP YOU TOO.

Photography continues to grow and so does the need for repair technicians. Plan to grow with this expanding industry.

PLAN and PREPARE for a lifetime profession, part-time second income or retirement avocation. Home study or resident courses — earn while you LEARN.

Courses include:

- ◆ All texts to keep
- ◆ Tools to keep
- ◆ Loan kits for hands-on experience
- ◆ Practice equipment
- ◆ Professional instruction
- ◆ Placement assistance

Send TODAY for FREE colorful booklet, with all details on the National Camera Photo Equipment Repair Course. No salesman will call.

Accredited member NHSC, NATTS. Accredited, State of Colorado. Approved for Veterans' training

1975-Our 23rd year

National Camera
Technical Training Division
2000 West Union Ave. Dept. AEA
Englewood, Colorado, 80110

I am interested in ☐ classroom; ☐ home study.

☐ Check here if veteran.

Name _____

Street _____

City _____

State _____

Zip _____

National Camera
Technical Training Division
2000 West Union Ave. Dept. AEA
Englewood, Colorado, 80110

PRODUCT PROOF SHEET

(Continued from page 17)



SCREEN YOUR POLAROID

Halftone screen kits for Polaroid cameras give instant screened prints and negatives that can be pasted up in a mechanical printing layout and as easily reproduced as the halftones in the lithographic processes. Quix-Tone 65, 85 and 100-line screens fit most film pack and roll-type Polaroid cameras and film assemblies. When a picture is taken, the fine dots on the camera-mounted screen become part of the photo. Quix-Tone kits, \$10, are marketed by Graphic Arts Center, 493 East Main Street, Ventura, California 93001. California residents add six-percent sales tax.



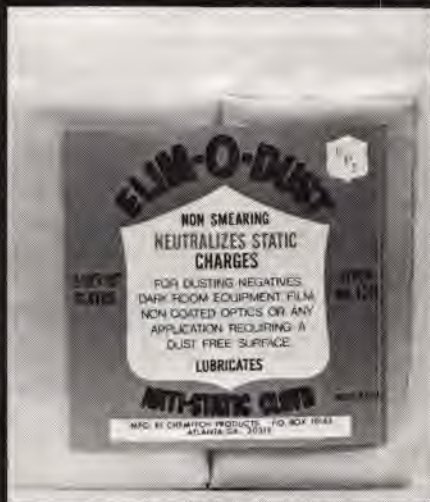
TOSHIBA MINI-ASTRON FLASH LIGHTS UP TRIMLITE 110 CAMERAS

A new electronic flash weighing less than four ounces, the Toshiba Mini-Astron fits the flash socket of Flipflash-equipped 110 cameras. Powered by two 1.5-volt penlight alkaline or manganese batteries, the Mini-Astron features a guide number of 25 for ASA 25 film. With alkaline batteries, it can yield up to 180 flashes at approximately 1/1000 second with a recycle time between 10 and 12 seconds. Light distribution is 40° vertical and 50° horizontal; flash is balanced for daylight-type films. The Toshiba Mini-Astron has a suggested retail price of \$17.95. Toshiba flash units are distributed by Elmo Mfg. Corp., 32-10 57th Street, Woodside, New York 11377.



POLAROID ADAPTER BACK INTRODUCED FOR MAMIYA RB-67

Model MF-3 film holder from the Photo Division of NPC, Inc., permits the photographer to use Polaroid materials with the Mamiya RB-67 or RP-67 Pro-S cameras. The film holder accepts Polaroid pack films to produce a 2 1/8-inch (7x7cm) square picture. The MF-3 is constructed of aluminum and stainless steel interface with a plastic body and a precision roller assembly for film processing. Unit includes a convenient holder for storing the dark slide while the back is in use. The MF-3 back has a suggested list price of \$140; for information, contact Mr. D.O. Stolper, Marketing Manager, Photo Division, NPC, Inc., 381 Elliot Street, Newton Upper Falls, Massachusetts 02164.



DARKROOM DUST CLOTH

Elim-O-Dust Cloths are treated with an antistatic and lubricant for wiping film prior to enlarging or projecting. Elim-O-Dust Cloths do not smear or smudge film surfaces but leave an electro-positive charge which repels dust particles. They do not interfere with the developer wetting paper surfaces when contamination occurs during paper handling. Suggested retail price is \$2.75 for two 10x10-inch cloths or \$1.50 for one 10x10-inch cloth. Both are sold in protective resealable plastic bags and are products of Chemtech Products, Inc., P.O. Box 10143, Atlanta, Georgia 30319.



NEW SLIDE PROJECTORS FROM GAF

The new GAF 2710 and 2720 Hush-A-Matic slide projectors are styled in black and silver and have a five-inch f/2.8 lens backed by a 400-watt DAT bulb for brilliance. Both projectors provide remote control, a choice of forward and reverse cycles and a built-in timer that can change slides automatically at intervals ranging from 5-20 seconds, automatic focus and a built-in pop-up editor. Four slide handling systems can be used: the 100-slide circular GAF Rototray, the 36-slide Easy-Edit straight tray, the GAF Stack Loader for previewing up to 40 slides at a time and the pop-up editor for slide sorting. Available accessories include 3½ to 5-inch zoom lens, remote control extension cords and a GAF Auto Sync tape synchronizer for slide/sound presentations. The GAF 2720, \$299.95, offers two additional features not found on the GAF 2710, \$199.95—a self-storing power cord that automatically retracts into the machine and an outlet for a room light. For more information, write GAF Corporation, Consumer Photo Products, 140 West 51 Street, New York, New York 10020.



END SORE SHOULDERS

The Photographers' Shoulder Pad from Cathey Enterprises is for those who must carry heavy gadget bags and cameras. The pad is made of top-grain cowhide permanently bonded to a rugged Neoprene rubber cushion that has been designed for comfort. It reduces the pressure of the strap, conforms to the shape of the shoulder and eliminates slippage. The Photographers' Shoulder Pad is available from Cathey Enterprises, Dept. PT, 1165 Walnut Avenue, Chula Vista, California 92011, for \$5.95 plus 60¢ postage and handling.

COMPUTERIZED COLOR CONTROL VIDEO ANALYZED

Sell PROFESSIONAL QUALITY

★ CANDID
★ HOME PORTRAITS
★ SCHOOL PROMS
★ WEDDINGS

VERICOLOR II
120 - 220 - 135 - 70 MM

TEXTURED
MATTE

4 x 5 10-12 Exposure Roll \$ 3.45 Complete
5 x 7 12 Exposure Roll \$ 7.45 Complete
8x10 12 Exposure Roll \$15.65 Complete
8.15-20-24-36 Exposure ask for price list.
8 x 10 \$1.40 each
Minimum order 6

BORDERLESS

SEND FOR FILM MAILER ★ COMPLETE PRICE LIST
(SEND CHECK WITH ORDER)

Pro Photo 213-219 SOUTH TYLER AVE.
P. O. DRAWERS 2 or BH,
LAKELAND, FLORIDA 33802

OPPORTUNITY...
open NOW for a **creative FRAMECRAFTERS studio** in your area!

If you enjoy working creatively with your hands, here's a chance to operate a NATIONALLY ADVERTISED custom picture and portrait framing studio WITHOUT payment of franchise fees! We help you learn all needed craft and business techniques, offer immediate wholesale sources if you qualify. Write: **CREATIVE FRAMECRAFTERS, DEPT. A1K**
SEND FOR DETAILS: 1205 W. Barkley, Orange, Ca. 92666

AUTHORS WANTED BY NEW YORK PUBLISHER

Leading book publisher seeks manuscripts of all types: fiction, non-fiction, poetry, scholarly and juvenile works, etc. New authors welcomed. For complete information, send for free booklet N-71. Vantage Press, 516 W. 34 St., New York 10001

Lindahl Dee LITE

with built in modeling lite

URNS ANY PORTABLE STROBE INTO A

- SOFT LIGHT
- STUDIO LIGHT
- WINDOW LIGHT
- SILHOUETTE LIGHT
- \$64⁹⁵ without stand

DISTRIBUTED BY

Deecolor

ST. JOSEPH, MI 49085
TELEPHONE (616) 429-3245

Studio _____
Address _____
City _____ State _____ Zip _____
Ordered by _____ Phone _____
Signature _____

	Unit Price	Price
Studio Model & 110V Modeling Light	\$64.95	
Portable Model & Rechargeable Battery Powered Modeling Light (Available Mid '76)	\$99.50	
Barn Doors (2)	\$19.50	
Delux Stand	\$50.00	
Sub Total		
Sales Tax (Mich. Customers Only)		
Postage + Handling		\$3.50
Total		

Send check with order to avoid C.O.D. Deecolor E.O.M. accounts will be billed.

BICENTENNIAL

NEWS



AMERICANA Magazine, a publication of the American Heritage Publishing Company, is sponsoring a national photography contest that will establish a pictorial record of America's Bicentennial celebration. Eligible photographs need only show activities, places, people or objects connected with the Bicentennial or in some other way establish a link with America as it existed two hundred years ago.

One amateur photographer and one professional will each receive \$500 for best photograph or series of photographs. The two first-place winners will also be offered photo assignments from *AMERICANA*. Second-place winners in each category will receive \$100 and a copy of the American Heritage Bicentennial book, *The World of 1776*. All final selections will be published in *AMERICANA* and displayed at a special Bicentennial exhibition.

The only entry requirement is that a black-and-white or color photograph must be taken between January 1 and

midnight July 4, 1976. Each photographer will be limited to 10 photographs. Official entry materials can be obtained by sending a self-addressed, stamped envelope to: *AMERICANA* Magazine Bicentennial Photo Contest, 1221 Avenue of the Americas, New York, New York 10020. Submissions deadline is midnight, August 15, 1976.



Minolta Corporation and *Manpower, Inc.*, are cosponsoring a Bicentennial photo contest entitled, *A Salute to the American Worker*, which will be offering \$75,000 in prizes. Photographs submitted in the *Manpower/Minolta* com-

petition must depict a U.S. worker in one or more of the many roles he/she fulfills on a paid or unpaid job, alone or in relation to other workers, in the home, at school or on a volunteer basis.

The contest is being held in two successive stages—local and national. The winner of each local contest will automatically be entered into the national competition. Local contests will be conducted by more than 200 participating *Manpower* offices. Each local first-prize winner will receive a Minolta SR-T 200 camera with 50mm Rokkor-X lens. Honorable mentions will each receive a copy of the book, *The West—An American Experience*.

The three grand prize winners at the national level will each receive an all-expense-paid trip for two to Williamsburg, Virginia, and Washington, D.C., or \$1200 cash. Three merit award winners will receive all-expense-paid weekends for two to popular U.S. cities or \$500 in cash. In addition, the six national winners will each be awarded a set of Minolta/Celtic wide-angle and telephoto lenses. Submissions are being accepted until April 30, 1976. Entry forms and complete rules can be obtained from participating Minolta dealers and *Manpower* offices or by writing to: Entry Form, *Manpower/Minolta* Photo Contest, P.O. Box 2160, Milwaukee, Wisconsin 53201.

CLEANS NEGATIVES, LENSES & SLIDES

and keeps them clean by neutralizing static. Fine soft tip brush removes dust.



1" Brush Size
Model 1C200
\$6.95

staticmaster®

At your dealer or write
NUCLEAR PRODUCTS CO.
P.O. Box 5178 • El Monte, Ca. 91734

IMPORT CAR OF THE YEAR

Be there when Motor Trend unveils the winner of the Import Car of the Year Award. Includes a road test of the winner and the story of its company.

PLUS:
More Road Tests, Special Features, New Products, Washington Report, International Report, Competition, Recalls, and much more!

ALL IN APRIL

**MOTOR
TREND**

MAGAZINE
ON SALE MARCH 25

MOVING?

DON'T MISS A SINGLE ISSUE OF PHOTOGRAPHIC!

Let us know your new address right away. Attach an old mailing label in the space provided and print your new address where indicated.

QUESTION ABOUT YOUR SUBSCRIPTION?

When you write, be sure to include a label. It helps us serve you more promptly.

TO SUBSCRIBE OR EXTEND YOUR SUBSCRIPTION—

Check the appropriate boxes below:

☐ New subscription. Please allow us up to 60 days to get the first copy into the mail.

☐ Renewal subscription. Please include a current address label to insure prompt and proper extension.

☐ 1 year \$9 or ☐ 2 years \$15

(U.S. Territories & Military only)

Other countries add \$1 per year.)

☐ Payment enclosed or ☐ Bill me (U.S. only)

Zip

State

ATTACH
LABEL
HERE

(If label is not handy, print OLD address in this space.)

MAIL TO: PHOTOGRAPHIC
Box 341A
Los Angeles, CA 90028

Name

Address

City

NEW

INTERSTATE COLOR LAB INC.

FRAMED COLOR ENLARGEMENTS

FROM YOUR 35MM OR LARGER NEGATIVE OR SLIDE

Price includes enlargement and a beautiful frame!

1620 CAMEO GALLERY



Professional 16x20 color print expertly cropped, color corrected, dodged, spotted. Mounted on tempered Masonite. Set in exquisite, deep relief hand rubbed Cameo frame. Two styles, two colors. Outstanding value. Introductory offer.

\$29.95

Frame finish and style:

☐ Antiqued white ☐ Walnut
☐ Oval (A) ☐ Rectangle (B)
Available from neg. and slides 35mm or larger.

16x20 Cameo print (frame 22x26), \$29.95
P & H \$3.95 each \$

EXHIBITOR 2024



20x24 custom print from 35mm or larger negative or slide. Silk finish. Dry mounted on heavy board. Framed in 2 1/4 inch walnut finished wood. Cropped, color corrected, dodged, spotted per your specs. Kodak paper.

\$19.95

\$22.95 from slide
Exhibitor 20x24 \$19.95 ea.
From slide \$22.95
P & H \$2.00 ea. \$

16x20 CUSTOM



Custom color print, from your negative or slide. In handsome 1 1/2 inch walnut-finished wood frame. Cropped to your specs. Dodged, spotted. Kodak paper.

\$14.95

From slide \$17.95

☐ SILK ☐ SEMI-GLOSS
16x20 size \$14.95
Add \$3 if slide
11x14 size \$10.00
Add \$3 if slide
P & H \$1 ea. 11x14; \$2 ea. 16x20 \$

11x14 TAPESTRY



11x14 machine color print, tapestry finish. Color corrected, spotted. Mounted in a 1 1/2 inch walnut finished wood frame.

\$5.95

\$6.95 from slide

PRINT SURFACE

☐ SILK ☐ SEMI-GLOSS
11x14 Framed Tapestry \$5.95
From your color slide \$6.95
P & H \$1 ea. \$

BARNSIDE



New way to display photos. Mounted on Masonite offset from pine plaque.

PRINT SIZE	PLAQUE SIZE	PRICE
3 1/2 x 5	5 3/8 x 6 3/8	\$4.95 \$
5x7	7 1/8 x 8 7/8	6.95 \$
8x10	11 1/4 x 13 3/8	9.95 \$
11x14	15 x 18 1/2	15.95 \$

MOUNTED HORIZONTAL OR VERTICAL WITH HANGING BRACKETS, STANDING EASEL \$2.50 ea. \$

GOLD LEAF LETTERING \$2.75 ea. \$
2 lines max. 25 characters per line.
Example: "Photograph By . . ."
plus your name. Additional Barnsides same imprint same order, \$25 ea. \$
P & H \$1 ea. for 3 1/2 x 5 and 5x7; \$2 ea. for 8x10 & 11x14 \$

PROFESSIONAL COLOR NEGATIVE

ROLL FILM PRINT & PROCESSING

Kodacolor — Ektacolor CPS — Vericolor II
Fujicolor — GAF — Kodachrome II
BORDERLESS ☐ SILK or ☐ SEMI-GLOSS PAPER

Price includes processing your roll of film.
ROLL FILM SIZE 120 (8, 10, 12 exposures)
(Roll film size 220 — double 120 price)
4x5 or 5x5 Prints, \$3.15 a roll* \$
5x7 Prints, \$5.95 a roll \$
8x10 Prints, \$12.60 per roll \$
*2 1/4 x 2 1/4 Negatives produce 5x5 prints.
2 1/4 x 2 1/4 and 2 1/4 x 3 1/4 produce 4x5 prints.
P&H Add 10% (Min. \$.50—Max. \$5.00)

ROLL FILM SIZE 35mm

Price includes processing your roll of film.
3 1/2 x 5 Prints—20 Exp., \$4.65 a roll \$
3 1/2 x 5 Prints—36 Exp., \$8.10 a roll \$
5x7 Prints—20 Exp., \$11.55 a roll \$
5x7 Prints—36 Exp., \$20.20 a roll \$
8x10 Prints—20 Exp., \$25.40 a roll \$
8x10 Prints—36 Exp., \$40.40 a roll \$
P&H Add 10% (Min. \$.60—Max. \$5.00)

PROFESSIONAL COLOR NEGATIVE

BORDERLESS REPRINTS

on ☐ SILK or ☐ SEMI-GLOSS PAPER
120, 220, 35mm NEGATIVES

3 1/2 x 5 (from 35mm Neg.) \$.38 ea. \$
4x5 Prints or 5x5, \$.58 ea. \$
5x7 Prints, \$.80 ea. \$
8x10 Prints, \$1.35 ea. \$
11x14 Prints, \$4.90 ea. \$
P&H Add 10% (Min. \$1.00—Max. \$5.00)

PRINTS FROM SLIDES

PROFESSIONAL BORDERLESS Type "R"
On Kodak's Ektachrome Print Material

2 1/2 x 3 1/2 (From 35mm) \$.35 ea. \$
3 1/2 x 3 1/2 or 3 1/2 x 5 Prints, \$.45 ea. \$
5x5 or 5x7 Prints \$.90 ea. \$
8x10 Prints, \$1.70 ea. \$
11x14 Prints, \$5.25 ea. \$
P&H Add 10% (Min. \$.50—Max. \$5.00)

PROFESSIONAL SLIDE PROCESSING

Kodachrome — Ektachrome

20 Exp. roll, \$1.95 ea. \$
36 Exp. roll, \$2.95 ea. \$
P&H Add 10% (Min. \$.50—Max. \$5.00)

GROUP 'N ONE



Shoot a group, make extra sales by including individual shot with each group photo. Use GROUP 'N ONE packages for irresistible presentation.

PACKAGE A	ITEM DESCRIPTION	PACKAGE B
1—7x5	Color print of group	1—10x8
1—3 1/2 x 5	Color print of one	1—5x7
1	Double board self-standing mount, grey borders on white, with group or organization's name stamped in gold.	1
Plus P & H per pkg.	Max. 2 lines—25	Plus P & H per pkg.
(processing included)	Characters (processing included)	

Shoot 135, 120 or 220 color neg. film: CX-CPS-VS-Kodachrome II; or slide film: Kodachrome-Ektachrome-GAF-Dynacolor. Horizontal composition for group, vertical for individual. Min. 10/ pkgs. 1 size.
"Group 'N One" Package A, \$1.49 Ea. \$
"Group 'N One" Package B, \$2.29 Ea. \$
P & H 10% first 100 or fewer ea. order \$

PARTY PAC

A photo package for special occasions. 2—5x7 color prints. 2—Deluxe Photo Folders (plain or dance folders.) 4—Wallet prints. PLUS: FREE . . . We'll stamp your name or group's name on folders.

\$1.79 processing included (Min. 20) \$
P & H 10% on first 100 or less pkgs. ordered at same time \$

WHAT FILMS TO SHOOT

135—20 or 36 Exp. 120—10 or 12 Exp. 220—20 or 24 Exp.
Color Neg. film only. CX-CPS-VS-Kodachrome II.
IMPORTANT: All pictures on roll must be shot at same exposure with same lighting (no candids.)

SELLING DISPLAY KIT

To promote the Party Pac—Send most appealing special occasion neg. and we'll send you a special promotion package.
1—16x20 framed enlargement.
3 complete party packs with 2 dance folders, 2 5x7 prints and 4 wallet prints.

\$20 value—Only

\$12.00

P & H \$1.00 per order \$

OTHER SERVICES: Prints mounted on canvas; video analyzed prints; professional wallet photos and 110, 126, 1/2 frame 35mm processing and printing; movie film processing; Ektachrome push processing; toning and texture screening of B & W prints; dry mounting; matte spray; internegs; wedding effects; salon mounting for exhibition prints. Write for details.

MINIMUM ORDER — \$3.50

Total Amount of Order \$
(P&H) \$
Indiana Residents Add 4% Sales Tax \$
Total Amount Enclosed \$
*Postage to foreign countries will be invoiced.
☐ Send Film Mailer and Price List PPG 476

NAME
ADDRESS
CITY APT.
STATE & ZIP

PLEASE DO NOT MIX ROLL & REPRINT ORDERS IN SAME ENVELOPE.
ALL PRICES SUBJECT TO CHANGE WITHOUT NOTICE.

READ THIS NOTICE!
The return of any film or print to us for processing or any other purpose, constitutes an agreement by you that if any such film or print is damaged or lost by us it will be replaced with an equivalent amount of unexposed film and processing. Except for such replacement, the handling of such film or prints by us is without warranty or liability even though damage or loss is caused by negligence or other fault.

INTERSTATE COLOR LAB INC.

P.O. BOX 246-R • SOUTH BEND, INDIANA 46634

VISITORS WELCOME

1230 Mishawaka Ave., South Bend, IN
Plant Hours: 9 to 4
Phone 219/232-9931

Edwal T.S.T.

TWO COMPONENT PAPER DEVELOPER



T.S.T. gives you power to control tone and contrast with only one paper. Costs as low as 44¢ per working gallon commercial strength from the cube. Lasts all day in the tray. 4000 8 x 10's per gal. of concentrate.

America's Foremost Liquid Developer
Sizes: Qts. Gals. and Cubes

Edwal • 12120 S. Peoria • Chicago 60643

ASA 1000 Ektachrome

ULTIMATE in custom Ektachrome (E-4) processing. High Speed Ektachrome processed ANYWHERE between ASA 40 and ASA 1000. No automation. Your film will be processed to your specifications for highest quality. Experience a new dimension in color slide photography. Now you can shoot slides anywhere. We also process any E-4 film such as infrared, duplicating and bulk loaded Ektachrome. **WRITE** for complete information and mailers....

CREATIVE PHOTOGRAPHY
 P. O. Box 2312-D Kettering, Ohio 45429

TEMP CONTROLS RECIRCULATING

controls to 1/10°F — works with all chemistries — cuts energy & water costs



PHOTO-THERM
 110 Sewell Ave.
 Trenton, N.J. 08610
 609-396-1456

FLASH METER

TRANSISTORIZED CIRCUIT READS INCIDENT LIGHT

ASA 12-400 f2 to f22

SIZE 2"x3"x4" USES 9 VOLT BATTERY
 \$38.00 PP W/O BATTERY GUARANTEED ONE YEAR
 R-H PRODUCTS
 FOR INFO SEND TO: 3212 SKYCROFT DRIVE
 MINNEAPOLIS, MN 55418

FORMULAS AND CHEMICALS

PROCESSING YOUR OWN B/W AND COLOR; FILM OR PAPER?

DIGNAN PHOTOGRAPHIC CAN SAVE YOU TIME AND MONEY WHILE IMPROVING YOUR RESULTS.

OVER 50,000 PHOTOGRAPHERS HAVE BENEFITED FROM OUR SERVICE OVER THE PAST 8 YEARS.

NEW!
 DIVIDED DEVELOPER COLOR CHEMISTRY FOR PAPER AND FILM NOW AVAILABLE

SEND FOR FREE CATALOG

DIGNAN PHOTOGRAPHIC, INC.
 Box 4338, Dept. PP, 12304 Erwin St.
 No. Hollywood, Calif. 91606

(Continued from page 20)

CONTEST NEWS

Nikon, Inc., announces a unique program for amateur photographers combining evaluation with major competition. Nikon **Response & Recognition** is a two-part program: the first part, *Response*, involves the evaluation of photographs by an expert panel of Nikon School instructors; five criteria will be considered—subject interest, composition, lighting, creative technique and visual impact. Pictures may then be awarded one of four honors—pictorial excellence, distinction, merit and recognition. Those photos which qualify for pictorial excellence will then be entered into the *Recognition* phase of the program. During this phase, winning photographers will be awarded over 250 prizes, and top winners will have their pictures published in *Nikon World Magazine* and exhibited in the Nikon House Gallery in New York City.

There are six categories in which photographs can be entered; an amateur photographer can enter all six, but only one entry per category is permitted and that photo must be a 35mm color transparency or an 8x10 color or black-and-white print. Each category is assigned a two-month time period, and entries will only be accepted during the assigned time. The categories and time periods are as follows: glamour—April 1, 1976 to May 31, 1976; nature—June 1, 1976 to July 31, 1976; sports—August 1, 1976 to September 30, 1976; travel—October 1, 1976 to November 30, 1976; still life—December 1, 1976 to January 31, 1977; pictorial—February 1, 1977 to March 31, 1977.

Each photo must be submitted in the official Nikon R&R entry kit, which costs \$1.50 and is available through authorized Nikon dealers. For further details and a copy of the official rules,

regulations and entry material, see your local Nikon dealer or write R&R Program, Nikon, Inc., 623 Stewart Avenue, Garden City, New York 11530.

* * * *

Pfefer Products is sponsoring **The Bag of Tricks** nationwide, semiannual creative photography contest which is open to all photographers. All entries must be taken using the Pfefer Bag of Trick screens, and all must be created on a single frame of film. The only dark-room manipulation allowed is cropping. The categories are: portrait (people or animals), still life and scenic; submissions may be 35mm or 2 1/4 slides or 8x10 prints. First prize is a Minolta SR-T 202 camera; second prize a Braun 40 VCR electronic strobe, and third prize is a Colourtronic Turbo-Drive color processing kit.

Entry deadline is June 1, 1976; submissions received after June 1 will be held for the next contest—deadline November 1, 1976. No entry fees are required. For complete details write to Pfefer Products, 485 Easy Street, Simi Valley, California 93065.

* * * *

All photographers under 26 years of age are invited to enter the **4th Annual Youth Showcase** contest sponsored by the *Photographic Society of America*. Winning and accepted entries will be on display during the PSA International Convention in Portland, Oregon, August 2-7, 1976.

Camera clubs and PSA chapters throughout the country will act as sponsors, holding preliminary competitions and awarding prizes for winning entries. Deadline for entries is June 1, 1976. Three grand prizes will be given at the convention.

For information and entry requirements write PSA Headquarters, 2005 Walnut Street, Philadelphia, Pennsylvania 19103.

PROFITS IN WEDDING PHOTOGRAPHY



\$100 PER DAY PROFIT—This book tells *How!* New, enlarged edition of *Guide To Wedding Photography* includes technical data and composition for over 60 best shots with over 30 illustrations. Based on years of professional experience. Complete *Guide To Wedding Photography*. Send \$3.00 to: **BRIDAL STUDIOS** P.O. Box 3511-P Lacey, Washington 98503

TRADE SECRETS OF CAMERA REPAIR

FIX YOUR OWN CAMERA

Complete illustrated text covers most cameras, old and new. Easy non-technical language, unique systems approach, clear photos! Praised in Nov. "Professional Photographer", Dec. PSA. Only \$8. Advanced Leica text \$8. Gafes \$6. Bellows Making \$5. Ed Romney, Hopewell Rd., Ellenboro, N.C. 28040. Keep this ad, it seldom appears.

1.00 Registers Your Camera Against Theft!

Camcon is a nationwide security registration service that furnishes you an ID card, decals and validated record proving ownership. Send for full details and forms: Camcon, P.O. Box 237-D, Dallas, Texas 75221

FREE CATALOG OFFER

Petersen offers a complete selection of over 70 special interest and hobby books—books about cars, photography, guns and more.

To get your **FREE** catalog, send to:
PETERSEN BOOKS CATALOG
 Dept. Bks. • 6725 Sunset Blvd., Los Angeles, CA 90028
 Be sure to include your return address.



HMC FLASH BRACKETS

Eliminates flash shadows and red eye. Direct and bounce flash.

See your local dealer
HOOS MFG. CO.
 1035 WESLEY AVENUE
 EVANSTON, ILL. 60202
 312/475-6400

GLEN FISHBACK

SCHOOL OF PHOTOGRAPHY, INC.
FREE-LANCE TRAINING
 3307 BROADWAY, SACRAMENTO, CA 95817

Do you shoot Slides or Color Transparencies?

TIP THE SCALES IN YOUR FAVOR!

**Quality & Service Up . . .
Price & Delays Down . . .**

We are the world leaders in production of Direct Color prints using the Kodak Type "R" print process. No inter-negative is required and you receive brilliant sparkling prints, directly from your slides, in choice of glossy or textured finish.

All prints are custom made, hand enlarged, color corrected & cropped to your specifications.

2x 3	.25	11x14	3.50
3x 5	.40	16x20	10.00
5x 7	.95	20x24	18.00
8x10	1.75	20x30	22.00

Minimum order, \$5.00

2 for 1 COLOR PRINT OFFER

This ad will bring you 2—11x14 color prints for the price of one. This introductory offer is limited to one offer per person and must be accompanied by this ad.

AND THE MOST EXCITING OF ALL!!

Direct color prints bonded into canvas, and stretched over wooden artists stretcher bars.

11x14	19.00	20x24	38.00
16x20	28.00	20x30	44.00

Blue ribbons awarded on all canvas prints of good quality.

Sorry, no color negatives accepted. Only transparencies up to 4" x 5".

Calif. residents add 6% tax.

POSITIVE COLOR

Professional Laboratories
P.O. Box 1458

Burbank, California 91507
Div. of American "R" Corporation
10335 Magnolia, N. Hollywood, Ca.

Send for complete price package and prepaid mailers.

The A.C.E. Background Stand for Seamless Paper

The perfect background. Sturdy & portable, sets-up in seconds. Make any room a studio. Galvanized steel, won't rust. Adjusts to 10' wide, and from 5' to 9 1/2' high. Order today. Only \$44.95, includes shipping. no C.O.D.'s.

A.C.E.
Distributors

5363 Central Avenue, St. Petersburg, Fla. 33710

RENT EVERYTHING PHOTOGRAPHIC
We ship everywhere.
Call or write for rental schedule.
(212) 725-1234
OLDEN CAMERA & LENS CO.
1265 Broadway, New York, N.Y. 10001



THE SHORT, SURE ROAD TO SUCCESS!
in professional freelance or studio photography. At Artography the no-nonsense approach teams you with pros in seminars limited to 15 — gets you right down to the business of making \$5 with your camera. VA approved. Write or call for additional information.

ARTOGRAPHY

Academy of Photographic Arts
8559 Sunset Canyon Rd., Hollywood, Ca 91607
(213) 985 2577

NEW! COLORBURST FILTER

Laser technology creates most unusual effects. **LOWEST PRICES.**
See your dealer or write:

KALT Corporation

2036 BROADWAY/SANTA MONICA/CALIFORNIA

ADVANCED AMATEURS

. . . PSA offers you new skills, new friends, new challenges.

The Photographic Society of America (PSA) is the organization for you. Eight different divisions let you share your own special interests with those who enjoy the same branch of photography. Join other serious amateurs and professionals—membership is now open. Send for information and application form today.

Membership Committee, Rm. 6-P
Photographic Society of America
2005 Walnut St., Phila., PA 19103



NAME _____
ADDRESS _____
CITY _____
STATE _____ ZIP _____

If it's worth enlarging . . .
Send your slides and negatives to

STORMY DAWN COLOR LABS

Custom color enlarging is our only business . . . and we do it right! To us, all our customers are professionals, and we give them the quality the pro demands.

Every print is carefully printed, balanced and cropped . . . by hand. Textured finishes (canvas, linen and universal) . . . flush dry mounting on heavy weight board are included FREE . . . as part of our custom service. We pay the postage and handling charges.

Don't settle for less than the finest . . .
See what the specialists can do with your favorite shots. Send them to:

And, check these prices!

5x7		\$3.00
8x10		\$5.00
11x14		\$8.00
16x20		\$16.00

Prints from slides — add \$1.50 for an internegative. Your enlargements are completed and shipped within 7 working days. Add 3 days for internegative.

STORMY DAWN COLOR LABS Box 1017 • West Englewood, New Jersey 07666

☐ _____ negs. _____ slides enclosed. Please indicate quantity, size and finish wanted for each. Enclose check or money order. N.J. residents add 5% sales tax.

☐ Please send me a free mailer and the details about Stormy Dawn custom enlarging.

Charge my: ☐ MASTERCHARGE ☐ BANKAMERICARD

Acct. No. _____

Expiration Date _____

Name _____

Street _____

City _____

State _____ Zip _____

Signature _____ (Charge orders must be signed!)

PAINTED BACKGROUNDS FOR PROFESSIONAL RESULTS

Hand painted on artist canvas. Portable and studio sizes. For color, b/w portraits. Full line wedding, studio specialties.

Send \$1.00 (refundable first order) for Canvas Samples, Color Prints, Catalog.

THE PIERCE CO. — DEPT. PP

9801 Nicollet, Minneapolis, MN 55420
Serving Photographers Since 1941



PETER GOWLAND PHOTOGRAPHY BOOKS

Sourcebook Booklet \$1
[Etc. Flash Simplified \$14
Guide to Glamour \$3

MODEL POSING GUIDES

Vol VI 363 Nudes \$5
Vol VII 363 Glamour \$5
Vol VIII 288 Glamour \$5
Vol IX 350 Nudes \$5
Vol X 296 Glamour \$5

GLAMOUR SLIDES

20 Settings \$7 20 Models \$10
20 Posing \$7 20 Ideas \$10
20 Lighting \$7 20 Effects \$10
20 Props \$7 20 Indoor \$10
20 Studio \$7 20 Pool \$10
20 Port In \$7 20 Outdoor \$10
20 Port Out \$7 20 Settings \$10
20 Beach \$7 with folder \$7

20 Nature slides \$7

GOWLANDER BODY \$545
GOWLAND KERAL CAM \$225
GOWLAND CAM STAND \$300

Calif. Res. add 6% tax
609 Hightree Place
Santa Monica, Ca. 90402

WE HAVE A CHEMICAL SYSTEM TO FIT YOUR NEEDS

Z-7 PHOTOCHEMICALS (Mix Your Own)

Basic photochemicals and instructions are available separately, or as kits, to prepare most popular black and white and color developers. Measure a teaspoon of this and a tablespoon of that from yourarder of a few dozen chemicals to mix fresh developers. Mix only what you need. We do not have all the recipes yet, but will keep all customers up to date with our newsletters.

Z-7 Color Print Kit 1 Contains chemicals, measuring spoons, and instructions to mix 8 quarts of solutions to process: prints from negatives using Ektacolor RC, or prints from slides using 1993 RC. (Acetic Acid not included) \$25 (incl. ship UPS)

SPECTRUM COLOR SYSTEMS

Spectrum color kits contain complete sets of prepared chemistry for many types of color processing. Most chemicals are provided as ready to dilute solutions; however, the critical developer chemicals are supplied as dry powders in redi-mix bottles to preserve freshness—add water and shake.

ZONE V inc. Box 811 Brookline, Mass. 02147

WRITE FOR COMPLETE DETAILS



FREE 35mm Color Slide Encyclopedia

World's most complete selection. Order any slide(s). You need not order sets. Scenic, cultural, historical, nature, science. All continents, over 100 countries. Same slides used on TV, national magazines, 250,000 quality-controlled slides. FREE 126 pages individual listings. Write: WOLFE WORLD WIDE FILMS, 1657 Sawtelle Blvd., Dept. 26-48 Los Angeles, CA 90025.

THIS SMALL TANK WILL PROCESS 30x40 PRINTS. THE LARGER ONE WILL HANDLE 40x60. SEND FOR MAGAZINE TEST REPORTS BY PHOTO EXPERTS.

PRICES: \$25 up, plus shipping.

MAXWELL PHOTO-MURAL

TANKS
(213) 289-1096



399 E. VALLEY BLVD., #6
ALHAMBRA, CALIF. 91801

WEDDING ALBUMS & MOUNTS

Professional quality wedding albums and mounts, all styles at wholesale prices. Shipped promptly. Large inventory. Send for FREE color catalog.

CROWN PRODUCTS

2178 Superior, Cleveland, Ohio 44114

NEW LEEDAL ECONOMIX \$105

Thermostatic water control unit maintains to $\pm 1/2^\circ\text{F}$ with large 3" thermometer and volume control. Write for info.

LEEDAL, INC., Dept. P-3

2929 S. Halsted St., Chicago, IL 60608

GLAMOUR MODELS

for photographers and artists

10 Glamour color slides \$3.50

10 Figure slides \$4.00

8 mm glamour color film \$25

Also original slides and negatives

SEND \$1 for illustrated catalogue and 2 slides

STARFIRE, Dept. 104

13837 Ventura Blvd., #10

P.O. Box 5363, Sherman Oaks, Ca. 91403

SHUTTERBUG ADS

109 NEVINS CT., BOX 730-R TITUSVILLE, FL 32780

SHUTTERBUG ADS

109 NEVINS CT., BOX 730-R TITUSVILLE, FL 32780

SHUTTERBUG ADS

109 NEVINS CT., BOX 730-R TITUSVILLE, FL 32780

SHUTTERBUG ADS

109 NEVINS CT., BOX 730-R TITUSVILLE, FL 32780

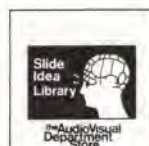
SHUTTERBUG ADS

109 NEVINS CT., BOX 730-R TITUSVILLE, FL 32780

ADVERTISING INDEX

A.C.E. Distributors	99
Artography Academy of Photographic Arts	99
Asanuma Corp.	6, 7
Associated Photographers International	80
Bell & Howell/Mamiya Co.	46
Bogen Photo Corp.	30, 32
Braun North America	71
Bridal Studios	98
Calumet Photographic, Inc.	52
Camcon, Camera Control Corp.	98
Canon USA, Inc.	18-19, Cover 3
Creative Photography	98
Creative Framemakers	95
Crown Products, Div. Chilcoote Co.	100
Custom Quality Studio	101
Da-Lite Screen Co., Inc.	91
Deecolor	95
Dignan Photographic, Inc.	98
Eastman Kodak Co.	15, 21, 23, Cover 4
Edwal Scientific Products	98
Elmo Manufacturing Corp.	57
Falcon Safety Products, Inc.	59
Fishback School of Photography	98
Flecto Co., Inc.	91
Foon	93
Peter Gowland Productions	100
Honeywell Photographic Products	3, 40-41
Hoos Manufacturing Co.	98
The H & W Co.	87
Ilford, Inc.	37-38
Interstate Color Lab, Inc.	97
Kalt Corp.	99
KM Enterprises	100
Larson Enterprises	51
Leedal, Inc.	100
E. Leitz, Inc.	57
Maxwell Photo-Mural Tanks	100
Minolta Corp.	25, 61
National Camera, Technical Training Div.	94
Nikkormat, E.P.O.I., Inc.	Cover 2
Novacon	93
Nuclear Products Co.	96
Ohio Institute of Photography	53
Olden Camera & Lens Co.	99
Omega, Div. Berkey Marketing Co., Inc.	12-13
Pfeiler Products	53
Photographic Society of America	99
Photography Learning Systems	51
Photo-Therm	98
Pierce Co.	100
Porterstown Products, Inc.	83
Positive Color Professional Labs	99
Professor Bloodgood's Studios	32
Pro Photo	95
Radio Shack, Div. Tandy Corp.	32
Rhode Island School of Photography	100
R-H Products	98
Ed Romney	98
The School of Modern Photography	29
Science & Mechanics	91
Shutterbug Ads	100
Soligor, AIC Photo, Inc.	61
Starfire	100
Stormy Dawn Color Lab	99
Studio W	87
Time-Life Books	8-11
20th Century Plastics, Inc.	35
Ultimate Experience	92
Vantage Press, Inc.	94
Verlan Industries, Inc.	4
Visual Horizons	100
Vivitar Darkroom Accessories, Ponder & Best, Inc.	31
Vivitar Flash, Ponder & Best, Inc.	72-73
Vivitar Lenses, Ponder & Best, Inc.	18
Wolfe Worldwide Films	100
Zone V	100

Please mention PhotoGraphic Magazine when responding to the advertisers listed above.



Slide Idea Library
311 quick new ways
to help you create
slide programs.

Visual Horizons
Complete Slide / Filmstrip Duplication

206 Westfall Road Rochester, New York 14620 (716) 442-3600

RISP

RHODE ISLAND SCHOOL OF PHOTOGRAPHY

Est. 1944

1 & 2 Year Courses

Approved for Veterans and Foreign Students

241 E WEBSTER AVE., PROVIDENCE, R.I. 02909

FREE CATALOG OFFER

Petersen offers a complete selection of over 70 special interest and hobby books—books about cars, photography, guns and more.

To get your FREE catalog, send to:

PETERSEN BOOKS CATALOG

Dept. Bks., 6725 Sunset Blvd., Los Angeles, CA 90028

Be sure to include your return address.

"Make Money in Wedding Photography"

Learn from a pro! This comprehensive guide helps you enter the ever-growing field of wedding photography, an opportunity to add thousands of dollars to your income—working only a few hours a week. Includes information on how to get started, how to book weddings, special techniques, customer contact, equipment—everything you need to know! Over 4,000 copies sold. New 1978 edition only \$3.00. Order from:

KM Enterprises P.O. Box 595, Winona, MN 55987



QUALITY PRINTING - QUALITY PROCESSING - PROVEN QUALITY

CUSTOM QUALITY STUDIO

PHOTO SPECTACULAR!

QUALITY DEVELOPING and PRINTING

SPECIAL

KODACOLOR ROLLS

Developed and Printed

110 - 12 Exp. 3½ x 4½ (3R)

126 - 12 Exp. 3½ x 3½ (3S)

620 - 120 - 127 - 12 Exp.
3½ x 3½ (3S)

PLUS 1st CLASS POSTAGE - 25¢

JUMBO SIZE

\$1.99

SUPER SPECIAL

KODACOLOR ROLLS - Developed and Printed

126 - 20 Exp. 3½ x 3½ (3S)

110 - 20 Exp. 3½ x 4½ (3R)

135 - 20 Exp. 3½ x 5 (3R)

PLUS 1st CLASS POSTAGE - 50¢

35mm - 36 Exp. 3½ x 5 (3R) Prints - \$5.49

PLUS 1st CLASS POSTAGE - 65¢

\$2.99

COLOR ENLARGEMENTS

From Color Negatives or Slides

5 x 7	\$.85
10 or more from same Negative or Slide ..	.60
8 x 10	\$1.40
10 or more from same Negative or Slide ..	.90
11 x 14	\$3.00
10 or more from same Negative or Slide ..	2.00

BLACK & WHITE ENLARGEMENTS

SUPER GLOSSY

5 x 7	\$.60
10 or more from same Negative	.45
8 x 10	\$.90
10 or more from same Negative	.70
11 x 14	\$1.75
10 or more from same Negative	1.00

OVERSIZE PRINTS - Available in Borderless Silk, Silk with Borders or Glossy with Borders.
COPY NEGATIVE OF PRINTS - Color \$2.00 each, Black and White - \$1.00 each.
MATTE or TEXTURED - 25¢ EXTRA PER PRINT.

PRINTS FROM COLOR NEGATIVES

35mm (only) 2½ x 3½ (Wallet size)	\$.17
10 or more from same negative	.14
35mm (only) 3½ x 5 Prints (3R)	.22
10 or more from same negative	.17
110 Negatives only 3½ x 4½ (3R)	.22
10 or more from same negative	.17
126 and Square Negatives 3½ x 3½ Prints (3S) ..	.22
10 or more from same negative	.17

CUSTOM HAND ENLARGEMENTS

These Custom Hand Enlargements are printed to meet your exacting requirements. Density and color balance is critically video analyzed to specific standards.

5x7 \$4.50	11x14 \$7.99	20x24 \$12.99
8x10 \$5.50	16x20 \$8.99	30x40 \$29.99

From Color Negatives, Silk is available up to 16 x 20 only.
From Color Slides, Silk is available up to 8 x 10 only.
Negatives and Slides must be 35mm thru 4 x 5 size only.
For underexposed slides, add \$3.00 for internegative.
\$2.00 for Shipping and handling.

NO C.O.D'S
or STAMPS
PLEASE!

REPRINTS & ENLARGEMENTS
MINIMUM ORDER - \$3.00

SHIPPING & HANDLING

Add 50¢ on orders up to \$5.00 for Shipping and Handling.

Orders over \$5.00 - add 10% of your total order.

PRINTS FROM COLOR SLIDES

Kodachrome - Ektachrome - GAF - Fujichrome

35mm (only) 2½ x 3½ (Wallet size)	\$.17
10 or more from same slide	.14
35mm (only) 3½ x 5 (3R)	.25
10 or more from same slide	.18
110 Slides (only) 3½ x 4½ (3R)	.25
10 or more from same slide	.18
126 and Square Slides 3½ x 3½ Prints (3S)	.25
10 or more from same slide	.18

CQS Custom Quality Studio

P.O. Box 4838 - Dept. CQ - Chicago, Illinois 60680

PLEASE SEND ME MY MAILER!

NAME _____

ADDRESS _____

CITY & STATE _____

(ZIP CODE) _____

PLEASE SPECIFY WHETHER YOU WANT (BORDERLESS OR WITH BORDERS - GLOSSY OR SILK PAPER).
PRICES SUBJECT TO CHANGE WITHOUT NOTICE.

ONE TO ONE

DAVID B. BROOKS

DECOPOUR FOR YOUR PHOTO PROJECTS

I'm planning to make a table for my den, the top of which will be a photographic montage of my family. I'd like to cover the surface in a decoupage finish, but from what I've read about the process it's long and tedious, requiring coat after coat of varnish. Is there some other method of covering the tabletop, one that will not take forever?—V. Jennings, New York City.



□ I've had to do a bit of research, Mr. Jennings, but have found a product that should meet your needs. Decopour is a pour-on, deep-gloss plastic manufactured by the Flecto Company.

Decopour will provide a dust seal, moisture seal and shatterproof coating over photographs in frames, on plaques, on tables or any other flat surface. Photographers and hobbyists are mounting photos on many natural products like wood plaques, wood burls, metal, plywood, etc. Decopour will work well on all of these surfaces, so it should be an excellent choice for your tabletop. And the Flecto Company reports that its product has been poured over the following photographic papers with good results: Agfacolor, Kodak Ektachrome RC, Ilford Cibachrome and Kodak Ektacolor RC.

All surfaces, with few exceptions, need to be sealed to keep air from surfacing through the Decopour. Hardwood, like walnut, which is close grained, need not be sealed. Most other woods that are open-grained, like pine and redwood, should be sealed with paint, stain, lacquer or a clear sealer. Next, mount your photographs on the tabletop with one of the following: glue, spray adhesive or two-sided adhesive. Roll out the air bubbles by placing plastic or foil over the photos and pressing out any trapped air pockets. While the plastic wrap is still on the pictures, weigh them down carefully, making sure that all corners are held in place securely. If the photographs are old and brittle, weighing them down while the adhesive sets is vital.

You are now ready to use the Decopour. If at all possible, work in a dust- and lint-free atmosphere where the

room temperature is between 68° and 80°F. Have all implements you will need ready: an ample supply of Decopour, spreading cards such as 3x5s or old IBM cards, a clean, hard disposable cup, a stirring stick, a toothpick for per-



sistent bubbles and a cover for your tabletop, such as an old sheet or drop cloth.

Following the instructions provided with the Decopour, mix equal parts of components A and B. Stir thoroughly but gently, making sure to continually scrape the sides of the cup. Lift up the material from the bottom of the cup periodically and wipe the stirring stick off on the edge of the cup several times during the mix. Stir for two minutes, watching the time carefully. Use a kitchen timer or stopwatch if possible.

Immediately, after exactly two minutes of mixing, pour the solution over the photographs on your tabletop, distributing it evenly in a circular or linear pattern. Pour all the material quickly and then begin to spread it out with a flexible card. You have approximately 13 minutes working time. Don't pour too close to the edge so the material runs off the side of your tabletop. You can draw it over the edges as you work on it. Spread or draw out the material, using your cards, from the center toward the edges as if you were decorating a cake. Float, don't scrape, with a

light touch, but one heavy enough to crack open the heads of any deeply trapped bubbles. Keep your card at about a 15° angle, similar to that of a cement finisher.

If your tabletop is small, you might be able to blow across its surface, and the carbon dioxide of your breath, not the force of the wind, will collapse the tiny bubbles that remain. If your tabletop is too large to manage with your own breath, fan the surface with a lighted propane torch. Keep it moving so the flame does not penetrate through the Decopour. (Decopour is nonflammable, so don't worry about using the torch.) Alternate the spreading and blowing until all bubbles and other imperfections seem to be removed.

When you are finished, your project needs to be covered for protection. You might plan to have three or four chairs around your work area so that when you are ready, you can drape a sheet, drop cloth or plastic cover over the tabletop to keep the dust off the surface for several hours. Let it dry in a warm, dry setting. The solution can be touched after about four hours but will still be hardening for up to five or six days.

If any imperfections are noticeable the next day, you can easily correct them by using a little sandpaper. Be sure to clean out all of the dust you create by brushing, vacuuming or rinsing with acetone. Then repour the total surface with a light coat of Decopour. Your finished tabletop will have a deep-gloss protective coating that will preserve your family photographs for a lifetime.

I feel I should pass on one piece of advice. Decopour is relatively easy and quick to work with *after* you have acquired some basic skills in using it. Why not start by practicing with small plaque or picture in a frame? When you have gained some confidence in yourself and some feeling for the product, then take on your tabletop project. Also, since your tabletop may be quite large (though you didn't mention its size), it might be a good idea to make it a family project. Having two or more family members on hand to help will allow the pouring and spreading to be done more quickly and efficiently.

Decopour comes with well-written, easy-to-understand instructions that are much more detailed and helpful than my simplified ones. You should have no trouble following them.

Decopour is now carried by many photo dealers around the country and in the photographic departments of some chain stores. If you cannot find a distributor in your area—though in New York there should be no problem—write or call, The Flecto Company, Inc., 1000 45th Street, Oakland, California 94608, (415) 655-2470. □

Compare the advantages. FTb is the obvious choice.

We think that the FTb is the best camera in its class in the world. It earned this distinction. It has solid value. Meticulous construction and quality. It has

the kind of refined performance features, versatility and human engineering you'd expect from Canon. But don't take our word for it. Decide for yourself.

● Exposure Metering

Any photographer serious about precision in exposure knows that it's vital to understand the exact area of the subject that the camera's metering. The spot metering system of the FTb measures only the central 12% of the viewfinder area. In difficult



every job from photomicrography to astrophotography makes the FTb a camera a novice can grow with—or a pro can stick with.

● Breech Lock Mount

The lens mount of the FTb and all Canon SLR's is the exclusive Breech Lock system. When you push a lens, the breech lock ring automatically turns slightly. All you have to do for a secure fit is turn the ring a little more. And because there's no turning between lens mount and body, there's no wear to affect sharpness.



● The Viewfinder

The FTb's viewfinder has everything you need to stay in complete control. It shows shutter speeds, over- and under-exposure warning marks, a stopped-down metering index and meter needle and aperture indicator ring. The bright focusing screen has a microprism focusing aid, and the metering area is shaded, so you never have to guess what you're measuring.



● Versatility

The unique FTb Booster lets the FTb read down to an exposure level of f/1.2 at 15 seconds with ASA 100 film (EV-3.5)! This coupled with the host of Canon accessories for



● Flash Photography

The exclusive CAT (Canon Auto Tuning) system for automatic electronic flash couples both to selected FD lenses and the camera's metering system. To use it, just focus and align meter needles as usual. Whatever you've focused on will be precisely exposed. Period.

● Film Loading

The FTb incorporates Canon's exclusive QL quick film loading system. All you do is position the film leader, close the back and start winding. It saves time and prevents film waste.



● Lenses

The FTb accepts all of the nearly forty superb Canon lenses, from 7.5mm Fish Eye to 1,200mm Super-Telephoto. These lenses are tops in



sharpness, contrast and mechanical quality. They incorporate all of the latest optical refinements, including Spectra and Super Spectra Coating, the Canon Floating System and the most modern optical glasses.

● Control Flexibility

The FTb's Stopped-Down/Self-Timer lever activates the self-timer and stops the lens down for checking depth-of-field. Adjacent controls can lock the aperture and lock up the mirror.



Canon[®] FTb

The Kodak gallery.



1.

2.



3.



Match some of the many different Kodak films with the endless imagination of serious photographers, and the results can be as varied as life. Here are three views:

1. "Runners," by James Trulove of Houston. Shot on Kodak high speed Ektachrome film at 1/125 sec, f/11, with strong backlighting.

2. "Nantucket Beach," by Rita Tarantino of New York City. A montage of three shots done on Kodachrome and Kodak high speed Ektachrome films. 3. "Sky Blossom," by Paul Freeland of Oklahoma City, who caught a colorful descent with Kodacolor film.



Kodak film.
A variety of beautiful choices.